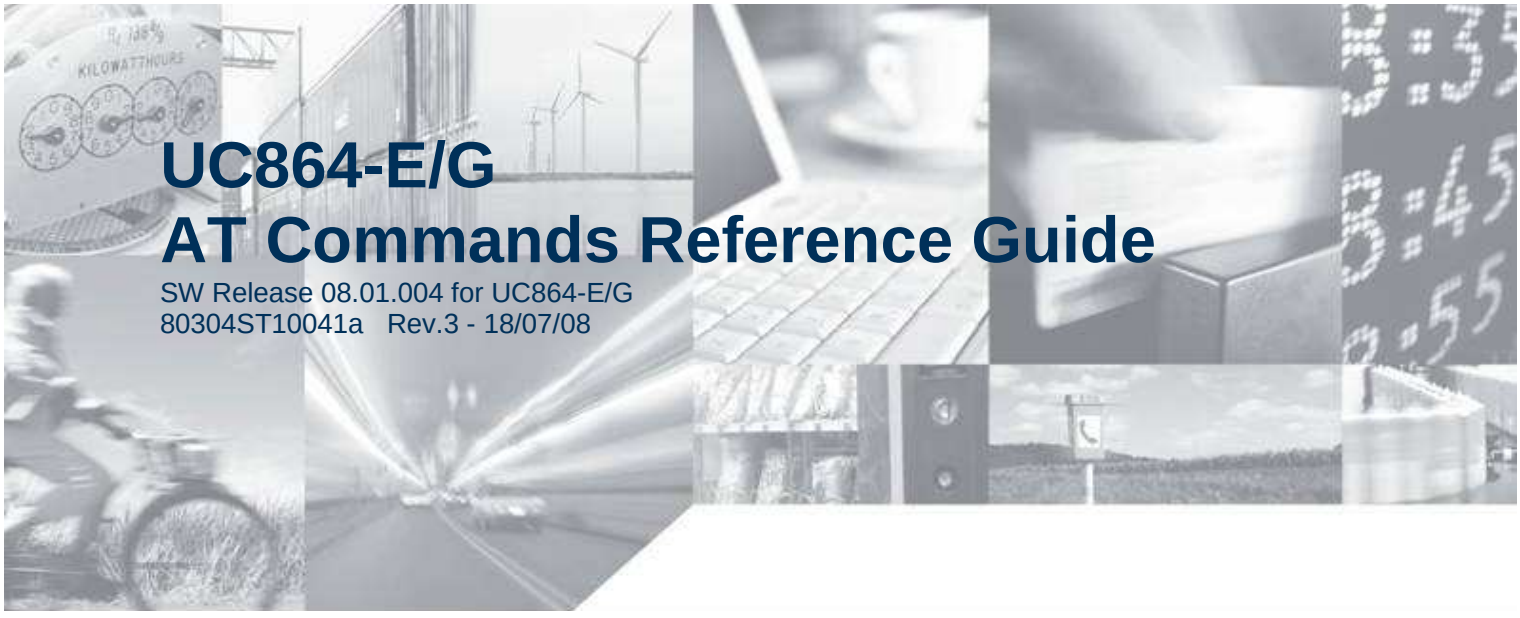

UC864-E/G
AT Commands Reference Guide

SW Release 08.01.004 for UC864-E/G
80304ST10041a Rev.3 - 18/07/08

Making machines talk.

This document is related to the following products:

	UC864-E	4990250031		UC864-G	4990250030

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1 INTRODUCTION

1.1 Scope of Document

To describe all AT commands implemented on the following Telit wireless modules:

Model	P/N
UC864-E	4990250031
UC864-G	4990250030

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2 APPLICABLE DOCUMENTS

a) 3gpp TS 27.005 specification and rules
b) 3gpp TS 27.007 specification and rules
c) Hayes standard AT command set
d) Rockwell RC56D & RC336D

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3 AT COMMANDS

The Telit wireless module family can be driven via the serial interface using the standard AT commands[1]. The Telit wireless module family is compliant with:

1. Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.
2. 3gpp TS 27.005 specific AT command (Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS))
3. 3gpp TS 27.007 specific AT command (AT command set for User Equipment (UE))

Moreover Telit wireless module family supports also Telit proprietary AT commands for special purposes.
In the following is described how to use the AT commands with the Telit wireless module family.

NOTE: **AT commands described in this document are compatible with Telit's unified AT command interface (SELINT=2). This gives a possibility to all system integrators that use UC864-E or UC864-G in their application design to migrate to any other module from the Telit Unified Form Factor range (GC864, CC864) in order to access to different communication technologies and markets.**

[1] The **AT** is an **ATTENTION** command and is used as a prefix to other parameters in a string. The AT command combined with other parameters can be set up in the communications package or typed in manually as a command line instruction.command combined with other parameters can be set up in the communications package or typed in manually as a command line instruction.

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3.1 Definitions

The following syntactical definitions apply:

<CR> **Carriage return character**, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255,is specified within parameter **S3**. The default value is 13.

<LF> **Linefeed character**, is the character recognised as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter **S4**. The default value is 10. The line feed character is output after carriage return character if verbose result codes are used (**V1** option used) otherwise, if numeric format result codes are used (**V0** option used) it will not appear in the result codes.

<...> Name enclosed in angle brackets is a syntactical element. They do not appear in the command line.

[...] Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a Read command, which are called *action type* commands, action should be done on the basis of the recommended default setting of the subparameter.

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3.2 AT Command Syntax

The syntax rules followed by Telit implementation of either Hayes AT commands and GSM/WCDMA commands are very similar to those of standard basic and extended AT commands.
There are two types of extended command:

- **Parameter type commands**. This type of commands may be “set” (to store a value or values for later use), “read” (to determine the current value or values stored), or “tested” (to determine ranges of values supported). Each of them has a test command (trailing **=?**) to give information about the type of its subparameters; they also have a Read command (trailing **?**) to check the current values of subparameters.

- **Action type commands**. This type of command may be “executed” or “tested”.
  - “executed“ to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use
  - “tested” to determine:
    whether or not the equipment implements the Action Command (in this case issuing the correspondent Test command - trailing **=?** - returns the **OK** result code), and, if subparameters are associated with the action, the ranges of subparameters values that are supported.

  Action commands don’t store the values of any of their possible subparameters.

Moreover:

The response to the Test Command (trailing **=?**) may be changed in the future by Telit to allow the description of new values/functionalities

If all the subparameters of a parameter type command **+CMD** (or **#CMD** or **$CMD**) are optional, issuing **AT+CMD=<CR>** (or **AT#CMD=<CR>** or **AT$CMD=<CR>**) causes the **OK** result code to be returned and the previous values of the omitted subparameters to be retained.

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3.2.1 String Type Parameters

A string, either enclosed between quotes or not, is considered to be a valid string type parameter input. According to V25.ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants; therefore a string containing a space character has to be enclosed between quotes to be considered a valid string type parameter (e.g. typing **AT+COPS=1,0,"A1"** is the same as typing **AT+COPS=1,0,A1**; typing **AT+COPS=1,0,"A BB"** is different from typing **AT+COPS=1,0,A BB**).

A small set of commands requires always writing the input string parameters within quotes: this is explicitly reported in the specific descriptions.

3.2.2 Command Lines

A command line is made up of three elements: the **prefix**, the **body** and the **termination character**.

The **command line prefix** consists of the characters "**AT**" or "**at**", or, to repeat the execution of the previous command line, the characters "**A/**" or "**a/**".
The **termination character** may be selected by a user option (parameter S3), the default being **<CR>**.
The basic structures of the command line are:

- **ATCMD1<CR>** where **AT** is the command line prefix, **CMD1** is the body of a **basic command** (nb: the name of the command never begins with the character "**+**") and **<CR>** is the command line terminator character
- **ATCMD2=10<CR>** where 10 is a subparameter
- **AT+CMD1;+CMD2=, ,10<CR>** These are two examples of **extended commands** (nb: the name of the command always begins with the character "**+**"[2]). They are delimited with semicolon. In the second command the subparameter is omitted.
- **+CMD1?<CR>** This is a Read command for checking current subparameter values
- **+CMD1=?<CR>** This is a test command for checking possible subparameter values

These commands might be performed in a single command line as shown below:

ATCMD1 CMD2=10+CMD1;+CMD2=, ,10;+CMD1?;+CMD1=?<CR>

anyway it is always preferable to separate into different command lines the basic commands and the extended commands; furthermore it is suggested to avoid placing several action commands in the same command line, because if one of them fails, then an error message is received but it is not possible to argue which one of them has failed the execution.

[2] The set of **proprietary AT commands** differentiates from the standard one because the name of each of them begins with either "@", "**#**", "**$**" or "*". **Proprietary AT commands** follow the same syntax rules as **extended commands**

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If command **V1** is enabled (verbose responses codes) and all commands in a command line has been performed successfully, result code **<CR><LF>OK<CR><LF>** is sent from the TA to the TE, if subparameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code **<CR><LF>ERROR<CR><LF>** is sent and no subsequent commands in the command line are processed.

If command **V0** is enabled (numeric responses codes), and all commands in a command line has been performed successfully, result code **0<CR>** is sent from the TA to the TE, if sub-parameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code **4<CR>** and no subsequent commands in the command line are processed.

In case of errors depending on ME operation, **ERROR** (or **4**) response may be replaced by **+CME ERROR: <err> or +CMS ERROR: <err>**.

NOTE: **The command line buffer accepts a maximum of 80 characters. If this number is exceeded none of the commands will be executed and TA returns ERROR.**

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3.2.2.1 ME Error Result Code - +CME ERROR: <err>

This is NOT a command, it is the error response to +**Cxxx 3gpp TS** 27.007 commands.
Syntax: **+CME ERROR: <err>**
Parameter: **<err>** - error code can be either numeric or verbose (see **+CMEE**).The possible values of **<err>** are reported in the table:

Numeric Format	Verbose Format
General errors:	
0	phone failure
1	No connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network time-out
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
General purpose error:	
100	unknown
GPRS related errors to a failure to perform an Attach:	
103	Illegal MS (#3)*
106	Illegal ME (#6)*
107	GPRS service not allowed (#7)*
111	PLMN not allowed (#11)*
112	Location area not allowed (#12)*
113	Roaming not allowed in this location area (#13)*

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Numeric Format	Verbose Format
GPRS related errors to a failure to Activate a Context and others:	
132	service option not supported (#32)*
133	requested service option not subscribed (#33)*
134	service option temporarily out of order (#34)*
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class
Easy GPRS® related errors	
550	generic undocumented error
551	wrong state
552	wrong mode
553	context already activated
554	stack already active
555	activation failed
556	context not opened
557	cannot setup socket
558	cannot resolve DN
559	time-out in opening socket
560	cannot open socket
561	remote disconnected or time-out
562	connection failed
563	tx error
564	already listening
Network survey errors:	
657	Network survey error (No Carrier)*
658	Network survey error (Busy)*
659	Network survey error (Wrong request)*
660	Network survey error (Aborted)*

*(Values in parentheses are 3gpp TS 24.008 cause codes)

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3.2.2.2 Message Service Failure Result Code - +CMS ERROR: <err>

This is NOT a command; it is the error response to +Cxxx 3gpp TS 27.005 commands
Syntax: **+CMS ERROR: <err>**
Parameter: **<err>** - numeric error code. The **<err>** values are reported in the table:

Numeric Format	Meaning
0...127	3gpp TS 24.011 Annex E-2 values
128...255	3gpp TS 23.040 sub clause 9.2.3.22 values
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network time-out
500	unknown error

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3.2.3 Information Responses And Result Codes

The TA response, in case of verbose response format enabled, for the previous examples command line could be as shown below:

- Information response to **+CMD1?** **<CR><LF>+CMD1:2,1,10<CR><LF>**
- Information response to **+CMD1=?** **<CR><LF>+CMD1(0-2),(0,1),(0-15)<CR><LF>**
- Final result code **<CR><LF>OK<CR><LF>**

Moreover there are other two types of result codes:

- *result code*s that inform about progress of TA operation (e.g. connection establishment **CONNECT**)
- *result code*s that indicate occurrence of an event not directly associated with issuance of a command from TE (e.g. ring indication **RING**).

Here the basic result codes according to ITU-T V25Ter recommendation

Result Codes	
Numeric form	Verbose form
0	OK
1	CONNECT
2	RING
3	NO CARRIER
4	ERROR
6	NO DIALTONE
7	BUSY
8	NO ANSWER

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3.2.4 Command Response Time-Out

Every command issued to the Telit modules returns a result response if response codes are enabled (default). The time needed to process the given command and return the response varies from command to command and may depend also from the network on which the command may interact. As a result every command is provided with a proper time-out period, if this time elapses without any result from the operation, then an **ERROR** response can be reported as if the operation was not successful and the operation is anyway terminated.

The time-out period is quite short for commands that imply only internal set up commands, but may be very long for command that interact with the network (or even a set of Networks).
The default time-out is **100 ms** for all the commands that have no interaction with the network or upper software layers.
In the table below are listed all the commands whose time-out differs from the default **100 ms** and their effective time-out is reported:

Command	Time-Out (Seconds)
+CBST	0.2
+CR	0.2
+CRC	0.2
+CRLP	0.2
+CSCS	0.2
+CEER	5
+CGMI	5
+CGMM	5
+CGMR	5
+CGSN	20
+CIMI	20
+CNUM	20
+CREG	5
+COPS	180
+CLCK	180
+CPWD	180
+CLIP	180
+CLIR	180
+CCFC	180
+CCWA	20
+CHLD	20
+CUSD	180
+CAOC	20
+CSSN	20
+CLCC	20
+CPAS	5
+CPIN	20
+CSQ	5
+CPBS	5

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Command	Time-Out (Seconds)
+CPBR	20
+CPBF	20
+CPBW	20
+CALM	5
+CRSL	5
+CLVL	5
+CMUT	5
+CACM	20
+CAMM	20
+CPUC	20
+CMEE	5
+VTS	20
+GMI	5
+GMM	5
+GMR	5
+GSN	20
I3	5
I4	5
I5	5
+CSMS	5
+CPMS	5
+CMGF	5
+CSCA	20
+CSMP	5
+CSDH	5
+CSAS	5
+CRES	5
+CNMI	5
+CMGS	180 / 5 for prompt”>”
+CMSS	180
+CMGW	5 / 5 for prompt”>”
+CMGD	5
+CMGR	5
+CMGL	5
+CNMA	180 / 5 for prompt”>”
+CMMS	5
#CAP	10
#SHDN	10
#CGMI	5
#CGMM	5
#CGMR	5
#CGSN	20
#CIMI	5
+CGACT	180
+CGATT	180

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Command	Time-Out (Seconds)
+CGDATA	20
+CGDCONT	20
+CGPADDR	20
+CGQMIN	20
+CGQREQ	20
+CGEQREQ	20
+CGEQMIN	20
+CGEQNEG	20

3.2.5 Command Issuing Timing

The chain Command -> Response shall always be respected and a new command must not be issued before the module has terminated all the sending of its response result code (whatever it may be).
This applies especially to applications that “sense” the **OK** text and therefore may send the next command before the complete code **<CR><LF>OK<CR><LF>** is sent by the module.
It is advisable anyway to wait for at least 20ms between the end of the reception of the response and the issue of the next AT command.
If the response codes are disabled and therefore the module does not report any response to the command, then at least the 20ms pause time shall be respected.
During command mode, due to hardware limitations, under severe CPU load the serial port can loose some characters if placed in autobauding at high speeds. Therefore if you encounter this problem fix the baud rate with **+IPR** command.

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3.3 Storage

3.3.1 Factory Profile And User Profiles

The Telit wireless modules stores the values set by several commands in the internal non volatile memory (NVM), allowing to remember this setting even after power off. In the NVM these values are set either as **factory profile** or as **user profiles**: there are **two customizable user profiles** and **one factory profile** in the NVM of the device: by default the device will start with user profile 0 equal to factory profile.
For backward compatibility each profile is divided into two sections, one **base section** which was historically the one that was saved and restored in early releases of code, and the **extended section** which includes all the remaining values.

The **&W** command is used to save the actual values of **both sections** of profiles into the NVM user profile.
Commands **&Y** and **&P** are both used to set the profile to be loaded at startup. **&Y** instructs the device to load at startup only the **base section**. **&P** instructs the device to load at startup the full profile: **base + extended sections**.
The **&F** command resets to factory profile values only the command of the base section of profile, while the **&F1** resets to factory profile values the full set of base + extended section commands.

The values set by other commands are stored in NVM outside the profile: some of them are stored always, without issuing any **&W**, some other are stored issuing specific commands (**+CSAS**, **#SLEDSAV**, **#VAUXSAV**, **#SKTSAV**, **#ESAV** and **$GPSSAV**); all of these values are read at power-up.

The values set by following commands are stored in the profile base section;:

GSM DATA MODE :	+CBST
AUTOBAUD :	+IPR
COMMAND ECHO:	E
RESULT MESSAGES:	Q
VERBOSE MESSAGES:	V
EXTENDED MESSAGES:	X
FLOW CONTROL OPTIONS:	&K, +IFC
DSR (C107) OPTIONS:	&S
DTR (C108) OPTIONS:	&D
DCD (C109) OPTIONS :	&C
RI (C125) OPTIONS :	\R
POWER SAVING:	+CFUN
DEFAULT PROFILE:	&Y0
S REGISTERS:	S0;S1;S2;S3;S4;S5;S7;S12;S25;S30;S38
CHARACTER FORMAT:	+ICF

The values set by following commands are stored in the profile extended section:

+FCLASS,	+ILRR,	+DR,
+CSCS,	+CR,	+CRLP,
+CRC,	+CSNS,	+CVHU,
+CREG,	+CLIP,	+CLIR,

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+CCWA,	+CUSD,	+CAOC,
+CSSN,	+CIND,	+CMER,
+CPBS,	+CMEE,	+CGREG,
+CMGF,	+CSCA,	+CSDH,
+CNMI,	#QSS,	#ACAL,
#ACALEXT,	#ECAM,	#SMOV,
#MWI,	#NITZ,	#SKIPESC,
#STIA,	#E2ESC	
+CALM,	+CRSL,	+CMUT,
+CLVL,	+VTD,	+CSCB,
#CAP,	#SRS,	#SRP,
#STM,	#DVI,	#E2SMSRI,
#CODEC,	#SHFEC,	#HFMICG[3],
#HSMICG,	#SHFSD,	#SPKMUT,
#E2SLRI,	#DAC	

The values set by following commands are automatically stored in NVM, without issuing any storing command and independently from the profile (unique values), and are automatically restored at startup:

#SELINT,	+COPS[3],	+CGCLASS,
+CGDCONT,	+CGQMIN,	+CGQREQ,
+CGEQMIN,	+CGEQREQ,	+WS46,
#DIALMODE,	#BND,	#AUTOBND,
#SCFG		

The values set by following commands are stored in NVM on demand, issuing specific commands and independently from the profile:

+CSCA,	+CSMP,	+CSCB

stored by +CSAS[4] command and restored by +CRES[4] command.

#SLED
stored by #SLEDSAV command.

#VAUX
stored by #VAUXSAV command.

#USERID,	#PASSW,	#PKTSZ,
#DSTO,	#SKTTO,	#SKTSET
#SKTCT		

stored by #SKTSAV command and automatically restored at startup; factory default valutes are restored by #SKTRST command.

#ESMTP,	#EADDR,	#EUSER,
#EPASSW		

stored by #ESAV command and automatically restored at startup; factory default valutes are restored by #ERST command.

$GPSP
stored by $GPSSAV command and automatically restored at startup; factory default valutes are restored by $GPSRST command.

[3] It is partially stored in NVM; see command description.
[4] Both commands +CSAS and +CRES deal with non-volatile memory, intending for it either the NVM and the SIM storage.

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3.4 AT Commands Availability Table

The following table lists the AT commands set and matches the availability of every single command versus the Telit wireless module family.

COMMAND	UC864-E	UC864-G	Function	Page
Command Line General Format – Command Line Prefixes				
AT	•	•	Starting A Command Line	29
A/	•	•	Last Command Automatic Repetition Prefix	29
General Configuration Commands – AT Interface Backward Compatibility				
#NOPT	•	•	Set Notification Port	30
#SELINT	•	•	Select Interface Style	30
Hayes AT Commands – Generic Modem Control				
&F	•	•	Set To Factory-Defined Configuration	32
Z	•	•	Soft Reset	32
+FCLASS	•	•	Select Active Service Class	32
&Y	•	•	Designate A Default Reset Basic Profile	33
&P	•	•	Designate A Default Reset Full Profile	33
&W	•	•	Store Current Configuration	33
&Z	•	•	Store Telephone Number In The Module Internal Phonebook	34
&N	•	•	Display Internal Phonebook Stored Numbers	34
+GMI	•	•	Manufacturer Identification	34
+GMM	•	•	Model Identification	35
+GMR	•	•	Revision Identification	35
+GCAP	•	•	Capabilities List	35
+GSN	•	•	Serial Number	35
&V	•	•	Display Current Base Configuration And Profile	35
&V0	•	•	Display Current Configuration And Profile	35
&V1	•	•	S Registers Display	36
&V3	•	•	Extended S Registers Display	36
&V2	•	•	Display Last Connection Statistics	37
\V	•	•	Single Line Connect Message	37
+GCI	•	•	Country Of Installation	37
%L	•	•	Line Signal Level	37
%Q	•	•	Line Quality	37
L	•	•	Speaker Loudness	37
M	•	•	Speaker Mode	38
Hayes AT Commands – DTE-Modem Interface Control				
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Q	•	•	Quiet Result Codes	38
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3.5 AT Commands References

3.5.1 Command Line General Format

3.5.1.1 Command Line Prefixes

3.5.1.1.1 Starting A Command Line - AT

AT - Starting A Command Line	
AT	The prefix **AT**, or **at**, is a two-character abbreviation (**ATtention**), always used to start a command line to be sent from TE to TA
Reference	3GPP TS 27.007

3.5.1.1.2 Last Command Automatic Repetition - A/

A/ - Last Command Automatic Repetition	
A/	If the prefix **A/** or **a/** is issued, the MODULE immediately executes once again the body of the preceding command line. No editing is possible and no termination character is necessary. A command line may be repeated multiple times through this mechanism, if desired. If **A/** is issued before any command line has been executed, the preceding command line is assumed to have been empty (that results in an **OK** result code). Note: this command works only at fixed IPR. Note: the custom command **#/** has been defined: it causes the last command to be executed again too; but it doesn't need a fixed IPR.
Reference	V25ter

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3.5.2 General Configuration Commands

3.5.2.1.1 Select Interface Style - #SELINT

#SELINT - Select interface style	
AT#SELINT=<v>	Set command sets the AT command interface style depending on parameter <v>. Parameter: **<v>** - AT command interface 2 - switches the AT command interface style of the product, to UC864-E/G
AT#SELINT?	Read command reports the current interface style.
AT#SELINT=?	Test command reports the available range of values for parameter **<v>**.
Note	It's suggested to reboot the module after every **#SELINT** setting.

3.5.2.1.2 Set Notification Port - #NOPT

#NOPT - Set notification port	
AT#NOPT=<num>	Set command sets the port output notification data (Indication data) UC864 Family has the following 5 ports: • Telit USB Modem Port • Telit USB Diagnostic Interface Port • Telit USB Auxiliary Port • UART Data Port • UART Trace Port Notification data will be sent to the specific port is set by #NOPT. Each port has the capability like as below table

	GND (C102)	TD (C103)	RD (C104)	RTS (C105)	CTS (C106)	DSR (C107)	DTR (C108)	RI (C125)	DCD (C125)
USB Modem	●	●	●	●	●	●	●	●	●
USB Diagnostic	●	●	●						
USB Auxiliary	●	●	●						
UART DATA	●	●	●	●	●	●	●	●	●
UART TRACE	●	●	●						

USB Diagnostic and UART TRACE are reserved for Telit Service.
USB Modem,USB Auxiliary and UART DATA are dedicated for M2M

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#NOPT - Set notification port	
	Interface. Parameter: **<num>** - Notification Port 0 – All Ports (Telit USB Modem,UART Data, USB Auxiliary) Notification data is sent to all ports. < default value > 1 – UART Data Port only 2 – Telit USB Modem Port only 3 – Telit USB Auxiliary Port only
AT#NOPT?	Read command reports the current notification port.
AT#NOPT=?	Test command reports the available range of values for parameter **<num>**.

3.5.3 Hayes Compliant AT Commands

3.5.3.1 Generic Modem Control

3.5.3.1.1 Set To Factory-Defined Configuration - &F

&F - Set To Factory-Defined Configuration	
AT&F[<value>]	Execution command sets the configuration parameters to default values specified by manufacturer; it takes in consideration hardware configuration switches and other manufacturer-defined criteria. Parameter: **<value>**: 0 - just the factory profile base section parameters are considered. 1 - either the factory profile base section and the extended section are considered (full factory profile). Note: if parameter **<value>** is omitted, the command has the same behaviour as **AT&F0**
Reference	V25ter.

3.5.3.1.2 Soft Reset - Z

Z - Soft Reset	
ATZ[<n>]	Execution command loads the base section of the specified user profile and the extended section of the default factory profile. Parameter: **<n>** 0..1 - user profile number Note: any call in progress will be terminated. Note: if parameter **<n>** is omitted, the command has the same behaviour as **ATZ0**.
Reference	V25ter.

3.5.3.1.3 Select Active Service Class - +FCLASS

+FCLASS - Select Active Service Class	
AT+FCLASS=<n>	Set command sets the wireless module in specified connection mode (data, fax, voice), hence all the calls done afterwards will be data or voice. Parameter: **<n>**

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+FCLASS - Select Active Service Class	
	0 - data 1 - fax class 1 8 - voice
AT+FCLASS?	Read command returns the current configuration value of the parameter **<n>**.
AT+FCLASS=?	Test command returns all supported values of the parameters **<n>**.
Reference	3GPP TS 27.007

3.5.3.1.4 Default Reset Basic Profile Designation - &Y

&Y - Default Reset Basic Profile Designation	
AT&Y[<n>]	Execution command defines the basic profiles which will be loaded on startup. Parameter: **<n>** 0..1 - profile (default is 0): the wireless module is able to store 2 complete configurations (see **&W**). Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&Y** will be loaded on every startup. Note: if parameter is omitted, the command has the same behaviour as **AT&Y0**

3.5.3.1.5 Default Reset Full Profile Designation - &P

&P - Default Reset Full Profile Designation	
AT&P[<n>]	Execution command defines which full profile will be loaded on startup. Parameter: **<n>** 0..1 – profile number: the wireless module is able to store 2 full configurations (see command **&W**). Note: differently from command **Z<n>**, which loads just once the desired profile, the one chosen through command **&P** will be loaded on every startup. Note: if parameter is omitted, the command has the same behaviour as **AT&P0**
Reference	Telit Specifications

3.5.3.1.6 Store Current Configuration - &W

&W - Store Current Configuration

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&W - Store Current Configuration	
AT&W[<n>]	Execution command stores on profile **<n>** the complete configuration of the device. Parameter: **<n>** 0..1 - profile Note: if parameter is omitted, the command has the same behaviour of **AT&W0**.

3.5.3.1.7 Store Telephone Number In The Module Internal Phonebook - &Z

&Z - Store Telephone Number In The Wireless Module Internal Phonebook	
AT&Z<n>=<nr>	Execution command stores in the record **<n>** the telephone number **<nr>**. The records cannot be overwritten, they must be cleared before rewriting. Parameters: **<n>** - phonebook record **<nr>** - telephone number (string type) Note: the wireless module has a built in non volatile memory in which 10 telephone numbers of a maximum 24 digits can be stored Note: to delete the record **<n>** the command **AT&Z<n>=<CR>** must be issued. Note: the records in the module memory can be viewed with the command **&N**, while the telephone number stored in the record ***n*** can be dialed by giving the command **ATDS=<*n*>**.

3.5.3.1.8 Display Internal Phonebook Stored Numbers - &N

&N - Display Internal Phonebook Stored Numbers	
AT&N[<n>]	Execution command returns the telephone number stored at the **<n>** position in the internal memory. Parameter: **<n>** - phonebook record number Note: if parameter **<n>** is omitted then all the internal records are shown.

3.5.3.1.9 Manufacturer Identification - +GMI

+GMI - Manufacturer Identification	
AT+GMI	Execution command returns the manufacturer identification.

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+GMI - Manufacturer Identification	
Reference	V.25ter

3.5.3.1.10 Model Identification - +GMM

+GMM - Model Identification	
AT+GMM	Execution command returns the model identification.
Reference	V.25ter

3.5.3.1.11 Revision Identification - +GMR

+GMR - Revision Identification	
AT+GMR	Execution command returns the software revision identification.
Reference	V.25ter

3.5.3.1.12 Capabilities List - +GCAP

+GCAP - Capabilities List	
AT+GCAP	Execution command returns the equipment supported command set list. Where: **+CGSM**: 3GPP TS command set **+FCLASS**: Fax command set **+DS**: Data Service common modem command set **+ES**: WCDMA data Service common modem command set **+MS**: Mobile Specific command set
Reference	V.25ter

3.5.3.1.13 Serial Number - +GSN

+GSN - Serial Number	
AT+GSN	Execution command returns the device board serial number. Note: The number returned is not the IMSI, it is only the board number
Reference	V.25ter

3.5.3.1.14 Display Current Base Configuration And Profile - &V

&V - Display Current Base Configuration And Profile	
AT&V	Execution command returns some of the base configuration parameters settings.

3.5.3.1.15 Display Current Configuration And Profile - &V0

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&V0 - Display Current Configuration And Profile	
AT&V0	Execution command returns all the configuration parameters settings. Note: this command is the same as **&V**, it is included only for backwards compatibility.

3.5.3.1.16 S Registers Display - &V1

&V1 - S Registers Display	
AT&V1	Execution command returns the value of the **S** registers in decimal and hexadecimal value in the format: **REG DEC HEX** **<reg0><dec> <hex>** **<reg1><dec> <hex>** ... where **<reg*n*>** - **S** register number 000..005 007 012 025 038 **<dec>** - current value in decimal notation **<hex>** - current value in hexadecimal notation

3.5.3.1.17 Extended S Registers Display - &V3

&V3 - Extended S Registers Display	
AT&V3	Execution command returns the value of the **S** registers in decimal and hexadecimal value in the format: **REG DEC HEX** **<reg0> <dec> <hex>** **<reg1> <dec> <hex>** ... where **<reg*n*>** - **S** register number 000..005 007 012 025 030 038 **<dec>** - current value in decimal notation **<hex>** - current value in hexadecimal notation

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3.5.3.1.18 Display Last Connection Statistics - &V2

&V2 - Display Last Connection Statistics	
AT&V2	Execution command returns the last connection statistics & connection failure reason.

3.5.3.1.19 Single Line Connect Message - \V

\V - Single Line Connect Message	
AT\V<n>	Execution command set single line connect message. Parameter: **<n>** 0 - off 1 - on

3.5.3.1.20 Country Of Installation - +GCI

+GCI - Country Of Installation	
AT+GCI=<code>	Set command selects the installation country code according to ITU-T.35 Annex A. Parameter: **<code>** 59 - it currently supports only the Italy country code
AT+GCI?	Read command reports the currently selected country code.
AT+GCI=?	Test command reports the supported country codes.
Reference	V25ter.

3.5.3.1.21 Line Signal Level - %L

%L - Line Signal Level	
AT%L	It has no effect and is included only for backward compatibility with landline modems

3.5.3.1.22 Line Quality - %Q

%Q - Line Quality	
AT%Q	It has no effect and is included only for backward compatibility with landline modems

3.5.3.1.23 Speaker Loudness - L

L - Speaker Loudness	
ATL<n>	It has no effect and is included only for backward compatibility with landline modems

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3.5.3.1.24 Speaker Mode - M

M - Speaker Mode	
ATM<n>	It has no effect and is included only for backward compatibility with landline modems

3.5.3.2 DTE - Modem Interface Control

3.5.3.2.1 Command Echo - E

E - Command Echo	
ATE[<n>]	Set command enables/disables the command echo. Parameter: **<n>** 0 - disables command echo 1 - enables command echo (factory default) , hence command sent to the device are echoed back to the **DTE** before the response is given. Note: if parameter is omitted, the command has the same behaviour of **ATE0**
Reference	V25ter

3.5.3.2.2 Quiet Result Codes - Q

Q - Quiet Result Codes	
ATQ[<n>]	Set command enables or disables the result codes. Parameter: **<n>** 0 - enables result codes (factory default) 1 - disables result codes 2 - disables result codes (only for backward compatibility) Note: After issuing either **ATQ1** or **ATQ2** every information text transmitted in response to commands is not affected Note: if parameter is omitted, the command has the same behaviour of **ATQ0**
Example	*After issuing ATQ1 or ATQ2* AT+CGACT=? **+CGACT: (0-1) nothing is appended to the response**
Reference	V25ter

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3.5.3.2.3 Response Format - V

<table>
<tr><th colspan="2">V - Response Format</th></tr>
<tr><td>ATV[<n>]</td><td>Set command determines the contents of the header and trailer transmitted with result codes and information responses. It also determines if result codes are transmitted in a numeric form or an alphanumeric form (see [§3.2.3 Information Responses And Result Codes] for the table of result codes).

Parameter:
<n>
0 - limited headers and trailers and numeric format of result codes

<table>
<tr><td>information responses</td><td><text><CR><LF></td></tr>
<tr><td>result codes</td><td><numeric code><CR></td></tr>
</table>

1 - full headers and trailers and verbose format of result codes (factory default)

<table>
<tr><td>information responses</td><td><CR><LF>
<text><CR><LF></td></tr>
<tr><td>result codes</td><td><CR><LF>
<verbose code><CR><LF></td></tr>
</table>

Note: the <text> portion of information responses is not affected by this setting.

Note: if parameter is omitted, the command has the same behaviour of ATV0</td></tr>
<tr><td>Reference</td><td>V25ter</td></tr>
</table>

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3.5.3.2.4 Extended Result Codes - X

X - Extended Result Codes	
ATX[<n>]	Set command selects the result code messages subset used by the modem to inform the **DTE** of the result of the commands. Parameter: **<n>** 0 - send only **OK**, **CONNECT**, **RING**, **NO CARRIER**, **ERROR**, **NO ANSWER** results. Busy tones reporting is disabled. 1..4 - reports all messages (factory default is 1). Note: If parameter is omitted, the command has the same behaviour of **ATX0** Note: Current value is returned by AT&V Parameter: <n> 0 - EXTENDED MESSAGES : X0=NO 1..4 - EXTENDED MESSAGES : X1=YES
Note	For complete control on **CONNECT** response message see also **+DR** command.
Reference	V25ter

3.5.3.2.5 Identification Information - I

I - Identification Information	
ATI[<n>]	Execution command returns one or more lines of information text followed by a result code. Parameter: **<n>** 0 - numerical identifier. 1 - module checksum 2 - checksum check result 3 - manufacturer 4 - product name 5 - DOB version Note: if parameter is omitted, the command has the same behaviour of **ATI0**
Reference	V25ter

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3.5.3.2.6 Data Carrier Detect (DCD) Control - &C

&C - Data Carrier Detect (DCD) Control	
AT&C[<n>]	Set command controls the RS232 **DCD** output behaviour. Parameter: **<n>** 0 - **DCD** remains **high** always. 1 - **DCD** follows the Carrier detect status: if carrier is detected **DCD** is high, otherwise **DCD** is **low**. (factory default) 2 - **DCD off** while disconnecting Note: if parameter is omitted, the command has the same behaviour of **AT&C0**
Reference	V25ter

3.5.3.2.7 Data Terminal Ready (DTR) Control - &D

&D - Data Terminal Ready (DTR) Control	
AT&D[<n>]	Set command controls the Module behaviour to the RS232 **DTR** transitions. Parameter: **<n>** 0 - **DTR** transitions are ignored. (factory default) 1 - when the MODULE is connected, the **High** to **Low** transition of **DTR** pin sets the device in command mode, the current connection is NOT closed. 2 - when the MODULE is connected , the **High** to **Low** transition of **DTR** pin sets the device in command mode and the current connection is closed. 3 - **C108/1** operation is enabled. 4 - **C108/1** operation is disabled. Note: if a connection has been set up issuing either **#SKTD** or **#SKTOP**, then **AT&D1** has the same effect as **AT&D2**. Note: if **AT&D2** has been issued and the **DTR** has been tied **Low**, autoanswering is inhibited and it is possible to answer only issuing command **ATA**. Note: if parameter is omitted, the command has the same behaviour of **AT&D0**
Reference	V25ter

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3.5.3.2.8 Standard Flow Control - \Q

\Q - Standard Flow Control	
AT\Q[<n>]	Set command controls the RS232 flow control behaviour. Parameter: **<n>** 0 - no flow control 1 - software bi-directional with filtering (**XON/XOFF**) 2 - hardware mono-directional flow control (only **CTS** active) 3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default) Note: if parameter is omitted, the command has the same behaviour as **AT\Q0** Note: Hardware flow control (**AT\Q3**) is not active in command mode. Note: **\Q's** settings are functionally a subset of **&K**'s ones.
Reference	V25ter

3.5.3.2.9 Flow Control - &K

&K - Flow Control	
AT&K[<n>]	Set command controls the RS232 flow control behaviour. Parameter: **<n>** 0 - no flow control 1 - hardware mono-directional flow control (only **CTS** active) 2 - software mono-directional flow control (**XON/XOFF**) 3 - hardware bi-directional flow control (both **RTS/CTS** active) (factory default) 4 - software bi-directional with filtering (**XON/XOFF**) 5 - pass through: software bi-directional without filtering (**XON/XOFF**) 6 - both hardware bi-directional flow control (both **RTS/CTS** active) and software bi-directional flow control (**XON/XOFF**) with filtering Note: if parameter is omitted, the command has the same behaviour as **AT&K0** Note: **&K** has no Read Command. To verify the current setting of **&K**, simply check the settings of the active profile issuing **AT&V**. Note: Hardware flow control (**AT&K3**) is not active in command mode.

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3.5.3.2.10 Data Set Ready (DSR) Control - &S

&S - Data Set Ready (DSR) Control	
AT&S[<n>]	Set command controls the RS232 **DSR** pin behaviour. Parameter: **<n>** 0 - always **High** 1 - follows the GSM traffic channel indication. 2 - **High** when connected 3 - **High** when device is ready to receive commands (factory default). Note: if option 1 is selected then **DSR** is tied **High** when the device receives from the network the UMTS traffic channel indication. Note: in power saving mode the **DSR** pin is always tied **Low** & USB_VBUS pin is always tied Low. Note: if parameter is omitted, the command has the same behaviour of **AT&S0**

3.5.3.2.11 Ring (RI) Control - \R

\R - Ring (RI) Control	
AT\R[<n>]	Set command controls the **RING** output pin behaviour. Parameter: **<n>** 0 - **RING** on during ringing and further connection 1 - **RING** on during ringing (factory default) 2 - **RING** follows the ring signal Note: to check the ring option status use the **&V** command. Note: if parameter is omitted, the command has the same behaviour of **AT\R0**

3.5.3.2.12 Fixed DTE Interface Rate - +IPR

+IPR - Fixed DTE Interface Rate	
AT+IPR=<rate>	Set command specifies the **DTE** speed (UART only) at which the device accepts commands during command mode operations; it may be used to fix the **DTE-DCE** interface speed. NOTE : DTE speed of USB port is always 0. DTE speed of USB does not change.

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+IPR - Fixed DTE Interface Rate	
	Parameter: **<rate>** - 300 600 1200 2400 4800 9600 19200 38400 57600 115200 (default) 230400 If **<rate>** is specified and not 0, **DTE-DCE** speed is fixed at that speed, hence no speed auto-detection (autobauding) is enabled.
AT+IPR?	Read command returns the current value of **+IPR** parameter.
AT+IPR=?	Test command returns the list of supported autodetectable **<rate>** values and the list of fixed-only **<rate>** values in the format: **+IPR**:(list of supported autodetectable **<rate>** values), (list of fixed-only **<rate>** values)
Reference	V25ter

3.5.3.2.13 DTE-Modem Local Flow Control - +IFC

+IFC - DTE-Modem Local Flow Control	
AT+IFC=<by_te>, <by_ta>	Set command selects the flow control behaviour of the serial port in both directions: from **DTE** to **modem** (**<by_ta>** option) and from **modem** to **DTE** (**<by_te>**) Parameters: **<by_te>** - flow control option for the data received by **DTE** 0 - flow control None 1 - **XON/XOFF** filtered 2 - **C105** (**RTS**) (factory default) 3 - **XON/XOFF** not filtered **<by_ta>** - flow control option for the data sent by **modem** 0 - flow control None 1 - **XON/XOFF** 2 - **C106** (**CTS**) (factory default) Note: Hardware flow control (**AT+IFC=2,2**) is not active in command mode. Note: This command is equivalent to **&K** command.
AT+IFC?	Read command returns active flow control settings.

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+IFC - DTE-Modem Local Flow Control	
	Note: If flow control behavior has been set with **AT&Kn** command with the parameter that is not allowed by **AT+IFC** the read command **AT+IFC?** will return: **+IFC: 0,0**
AT+IFC=?	Test command returns all supported values of the parameters **<by_te>** and **<by_ta>**.
Reference	V25ter

3.5.3.2.14 DTE-Modem Local Rate Reporting - +ILRR

+ILRR - DTE-Modem Local Rate Reporting	
AT+ILRR=<n>	Set command controls whether or not the **+ILRR: <rate>** information text is transmitted from the **modem** (module) to the **DTE**. Parameter: **<n>** 0 - local port speed rate reporting disabled (factory default) 1 - local port speed rate reporting enabled Note: this information if enabled is sent upon connection.
AT+ILRR?	Read command returns active setting of **<n>**.
AT+ILRR=?	Test command returns all supported values of the parameter **<n>**
Reference	V25ter

3.5.3.2.15 DTE-Modem Character Framing - +ICF

+ICF - DTE-Modem Character Framing	
AT+ICF=<format> [,<parity>]	Set command defines the asynchronous character framing to be used when autobauding is disabled. The UC864-E/G supoports only the 8 Data, 1 Stop setting. Parameters: **<format>** - determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame. 3 - 8 Data, 1 Stop (default) **<parity>** - determines how the parity bit is generated and checked, if present; setting this subparameter has no meaning. 0 - Odd (not supported) 1 - Even (not supported)
AT+ICF?	Read command returns current settings for subparameters **<format>** and **<parity>**. The current setting of subparameter **<parity>** will always represented as 0.
AT+ICF=?	Test command returns the ranges of values for the parameters **<format>** and **<parity>**

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+ICF - DTE-Modem Character Framing	
Reference	V25ter
Example	AT+ICF = 3 - 8N1 (default) AT+ICF=? +ICF: (3)

3.5.3.3 Call Control

3.5.3.3.1 Dial - D

D – Dial	
ATD<number>[;]	Execution command starts a call to the phone number given as parameter. If "**;**" is present, a **voice** call to the given number is performed, regardless of the current value of the connection mode set by **+FCLASS** command. Parameter: **<number>** - phone number to be dialed Note: type of call (**data**, **fax** or **voice**) depends on last **+FCLASS** setting. Note: the numbers accepted are 0-9 and *,#,"A", "B", "C", "+".
ATD><str>[;]	Issues a call to phone number which corresponding alphanumeric field is **<str>**; all available memories will be searched for the correct entry. If "**;**" is present a **voice** call is performed. Parameter: **<str>** - alphanumeric field corresponding to phone number; it must be enclosed in quotation marks. Note: parameter **<str>** is case sensitive. Note: used character set should be the one selected with **+CSCS**.
ATD><mem><n>[;]	Issues a call to phone number in phonebook memory storage **<mem>**, entry location **<n>** (available memories may be queried with **AT+CPBS=?**). If "**;**" is present a **voice** call is performed. Parameters: **<mem>** - phonebook memory storage; "SM" - SIM/UICC phonebook "FD" - SIM/USIM fixed dialing phonebook "LD" - SIM/UICC last dialing phonebook "MC" – missed calls list "RC" - Received calls list

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D – Dial	
	"DC" - MT dialled calls list "ME" - MT phonebook "EN" - SIM/USIM (or MT) emergency number (+CPBW is not be applicable for this storage) "ON" - SIM (or MT) own numbers (MSI torage may be available through +CNUM also). "MB" - mailbox numbers stored on SIM, if this service is provided by the SIM (see **#MBN**). **<n>** - entry location; it should be in the range of locations available in the memory used.
ATD><n>[;]	Issues a call to phone number in entry location **<n>** of the active phonebook memory storage (see **+CPBS**). If "**;**" is present a **voice** call is performed. Parameter: **<n>** - active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.
ATDL	Issues a call to the last number dialed.
ATDS=<nr>[;]	Issues a call to the number stored in the MODULE internal phonebook position number **<nr>**. **If ";" is present a voice** call is performed. Parameter: **<nr>** - internal phonebook position to be called (See commands **&N** and **&Z**)
ATD<number>I[;] **ATD<number>i[;]**	Issues a call overwriting the CLIR supplementary service subscription default value for this call If "**;**" is present a **voice** call is performed. **I** - invocation, restrict CLI presentation **i** - suppression, allow CLI presentation
ATD<number>G[;] **ATD<number>g[;]**	Issues a call checking the CUG supplementary service information for the current call. Refer to **+CCUG** command. If "**;**" is present a **voice** call is performed.
ATD*<gprs_sc> **[*<addr>][*[<L2P>]** **[*[<cid>]]]]#**	This command is specific of GPRS functionality and causes the **MT** to perform whatever actions are necessary to establish communication between the **TE** and the external PDN. Parameters: **<gprs_sc>** - GPRS Service Code, a digit string (value 99) which identifies a request to use the GPRS **<addr>** - string that identifies the called party in the address space applicable to the PDP. **<L2P>** - a string which indicates the layer 2 protocol to be used (see **+CGDATA** command). For communications software that does not support arbitrary characters in the dial string, the

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D – Dial	
	following numeric equivalents shall be used: 1 - PPP **<cid>** - a digit which specifies a particular **PDP** context definition (see **+CGDCONT** command).
Example	*To dial a number in SIM phonebook entry 6:* ATD>SM6 OK *To have a voice call to the 6-th entry of active phonebook:* ATD>6; OK *To call the entry with alphanumeric field "Name":* ATD>"Name"; OK
Reference	V25ter.

3.5.3.3.2 Tone Dial - T

T - Tone Dial	
ATT	Set command has no effect is included only for backward compatibility with landline modems.
Reference	V25ter.

3.5.3.3.3 Pulse Dial - P

P - Pulse Dial	
ATP	Set command has no effect is included only for backward compatibility with landline modems.
Reference	V25ter.

3.5.3.3.4 Answer - A

A - Answer	
ATA	Execution command is used to answer to an incoming call if automatic answer is disabled. Note: This command MUST be the last in the command line and must be followed immediately by a **<CR>** character.
Reference	V25ter.

3.5.3.3.5 Disconnect - H

H - Disconnect	
ATH	Execution command is used to close the current conversation (voice, data

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H - Disconnect	
	or fax). Note: this command can be issued only in command mode; when a data conversation is active the device is in on-line mode (commands are not sensed and characters are sent to the other party), hence escape sequence (see **register S2**) is required before issuing this command, otherwise if **&D1** option is active, **DTR** pin has to be tied **Low** to return in command mode.
Reference	V25ter.

3.5.3.3.6 Return To On Line Mode - O

O - Return To On Line Mode	
ATO	Execution command is used to return to on-line mode from command mode. If there's no active connection it returns **NO CARRIER**. Note: After issuing this command, if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see **register S2**) or tying low **DTR** pin if **&D1** option is active.
Reference	V25ter.

3.5.3.3.7 Guard Tone - &G

&G - Guard Tone	
AT&G	Set command has no effect is included only for backward compatibility with landline modems.

3.5.3.3.8 Sync/Async Mode - &Q

&Q - Sync/Async Mode	
AT&Q	Set command has no effect is included only for backward compatibility with landline modems.

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3.5.3.4 Modulation Control

3.5.3.4.1 Modulation Selection - +MS

+MS - Modulation Selection	
AT+MS= <carrier> [,<automode> [,<min_rate> [,<max_rate>]]]	Set command has no effect is included only for backward compatibility with landline modems. Parameters: **<carrier>** - a string which specifies the preferred modem carrier to use in originating or answering a connection V21 V22 V22B V23C V32 V34 **<automode>** - it enables/disables automatic modulation negotiation. 0 - disabled 1 - enabled. It has effect only if it is defined for the associated modulation. **<min_rate>** - it specifies the lowest value at which the **DCE** may establish a connection. 0 - unspecified **<max_rate>** - it specifies the highest value at which the **DCE** may establish a connection. 0 - unspecified 300..14400 - rate in bps Note: to change modulation requested use **+CBST** command.
AT+MS?	Read command returns the current value of **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters.
AT+MS=?	Test command returns all supported values of the **<carrier>**, **<automode>**, **<min_rate>**, **<max_rate>** parameters.

3.5.3.4.2 Line Quality Monitor And Auto Retrain Or Fallback/Fallforward - %E

%E - Line Quality Monitor And Auto Retrain Or Fallback/Fallforward	
AT%E<n>	Execution command has no effect and is included only for backward compatibility with landline modems.

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3.5.3.5 Compression Control

3.5.3.5.1 Data Compression - +DS

+DS - Data Compression	
AT+DS=[<dir>[,<neg>[,<P1>[,<P2>]]]]	Set command sets the V42 compression parameter. Parameter: **<dir>. :** desired direction of operations 0 - no compression, it is currently the only supported value 1 - Transmit only. 2 - Receive only. 3 - Both directions, accept any direction. Default is 3. **<neg> :** whether the DCE should continue to operate if the desired result is not obtained. 0 Do not disconnect if V.42 bis is not negotiated by the remote DCE as specified in <direction>. **<P1> :** maximum number of dictionary entries 512-2048 Default is decided by manufacture **<P2) :** the maximum string length Default is 6
AT+DS?	Read command returns current value of the data compression parameter.
AT+DS=?	Test command returns all supported values of the parameter **<n>**
Reference	V25ter

3.5.3.5.2 Data Compression Reporting - +DR

+DR - Data Compression Reporting	
AT+DR=<n>	Set command enables/disables the data compression reporting upon connection. Parameter: **<n>** 0 - data compression reporting disabled; 1 - data compression reporting enabled upon connection. Note: if enabled, the following intermediate result code is transmitted before the final result code: **+DR: <compression>** (the only supported value for **<compression>** is "**NONE**")
AT+DR?	Read command returns current value of **<n>**.
AT+DR=?	Test command returns all supported values of the parameter **<n>**
Reference	V25ter

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3.5.3.6 Break Control

3.5.3.6.1 Transmit Break To Remote - \B

\B - Transmit Break To Remote	
AT\B	Execution command has no effect and is included only for backward compatibility with landline modems

3.5.3.6.2 Break Handling - \K

\K - Break Handling	
AT\K[<n>]	Execution command has no effect and is included only for backward compatibility with landline modems Parameter: **<n>** 0..5

3.5.3.6.3 Operating Mode - \N

\N - Operating Mode	
AT\N	Execution command has no effect and is included only for backward compatibility with landline modems

3.5.3.7 S Parameters

Basic commands that begin with the letter "**S**" are known as "**S-Parameters**". The number following the "**S**" indicates the "parameter number" being referenced. If the number is not recognized as a valid parameter number, an **ERROR** result code is issued.

If no value is given for the subparameter of an **S-Parameter**, an **ERROR** result code will be issued and the stored value left unchanged.

Note: what follows is a special way to select and set an **S-parameter**:

1. **ATS*n*<CR>** selects ***n*** as current parameter number. If the value of ***n*** is in the range (0, 2, 3, 4, 5, 7, 10, 12, 25, 30, 38), this command establishes **S*n*** as last selected parameter. Every value out of this range and less than 256 can be used but has no meaning and is maintained only for backward compatibility with landline modems.
2. **AT=<value><CR>** or **ATS=<value><CR>** set the contents of the selected **S-parameter**

Example:

ATS7<CR> establishes **S7** as last selected parameter.

Reference	V25ter and RC56D/RC336D

3.5.3.7.1 Number Of Rings To Auto Answer - S0

S0 - Number Of Rings To Auto Answer	
ATS0=[<n>]	Set command sets the number of rings required before device automatically answers an incoming call. Parameter: **<n>** - number of rings 0 - auto answer disabled (factory default) 1..255 - number of rings required before automatic answer.
ATS0?	Read command returns the current value of **S0 parameter**.
Reference	V25ter

3.5.3.7.2 Ring Counter - S1

S1 - Ring Counter	
ATS1	**S1** is incremented each time the device detects the ring signal of an incoming call. **S1** is cleared as soon as no ring occur. Note: the form **ATS1** has no effect.
ATS1?	Read command returns the value of this parameter.

3.5.3.7.3 Escape Character - S2

S2 - Escape Character	
ATS2=[<char>]	Set command sets the ASCII character to be used as escape character. Parameter: **<char>** - escape character decimal ASCII 0..255 - factory default value is 43 (+). Note: the escape sequence consists of three escape characters preceded and followed by ***n*** ms of idle (see **S12** to set ***n***).
ATS2?	Read command returns the current value of **S2** parameter. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.3.7.4 Command Line Termination Character - S3

S3 - Command Line Termination Character	
ATS3=[<char>]	Set command sets the value of the character either recognized by the device as command line terminator and generated by the device as part of the header, trailer, and terminator for result codes and information text, along with **S4 parameter**. Parameter: **<char>** - command line termination character (decimal ASCII) 0..127 - factory default value is 13 (ASCII **<CR>**) Note: the “previous” value of **S3** is used to determine the command line termination character for entering the command line containing the **S3** setting command. However the result code issued shall use the “new” value of **S3** (as set during the processing of the command line)
ATS3?	Read command returns the current value of **S3 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s
Reference	V25ter

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3.5.3.7.5 Response Formatting Character - S4

S4 - Response Formatting Character	
ATS4=[<char>]	Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the **S3 parameter**. Parameter: **<char>** - response formatting character (decimal ASCII) 0..127 - factory default value is 10 (ASCII **LF**) Note: if the value of **S4** is changed in a command line the result code issued in response of that command line will use the new value of **S4**.
ATS4?	Read command returns the current value of S4 parameter. Note: the format of the numbers in output is always 3 digits, left-filled with 0s
Reference	V25ter

3.5.3.7.6 Command Line Editing Character - S5

S5 - Command Line Editing Character	
ATS5=[<char>]	Set command sets the value of the character recognized by the device as a request to delete from the command line the immediately preceding character. Parameter: **<char>** - command line editing character (decimal ASCII) 0..127 - factory default value is 8 (ASCII **BS**)
ATS5?	Read command returns the current value of **S5 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s
Reference	V25ter

3.5.3.7.7 Connection Completion Time-Out - S7

S7 - Connection Completion Time-Out	
ATS7=[<tout>]	Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by **A** command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device. Parameter: **<tout>** - number of seconds 1..255 - factory default value is 60
ATS7?	Read command returns the current value of **S7 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

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S7 - Connection Completion Time-Out	
Reference	V25ter

3.5.3.7.1 – Carrier Off With Firm Time - S10

S10 –Carrier Off With Firm Time	
ATS10	Execution command has no effect and is included only for backward compatibility with landline modems

3.5.3.7.2 Escape Prompt Delay - S12

S12 - Escape Prompt Delay	
ATS12=[<time>]	Set command sets: 1) the minimum period, before receipt of the first character of the three escape character sequence, during which no other character has to be detected in order to accept it as valid first character; 2) the maximum period allowed between receipt of first or second character of the three escape character sequence and receipt of the next; 3) the minimum period, after receipt of the last character of the three escape character sequence, during which no other character has to be detected in order to accept the escape sequence as a valid one. Parameter: **<time>** - expressed in fiftieth of a second 20..255 - factory default value is 50. Note: the minimum period **S12** has to pass after **CONNECT** result code too, before a received character is accepted as valid first character of the three escape character sequence.
ATS12?	Read command returns the current value of **S12 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.3.7.3 Delay To DTR Off - S25

S25 -Delay To DTR Off	
ATS25=[<time>]	Set command defines the amount of time, in hundredths of second, that the device will ignore the **DTR** for taking the action specified by command **&D**. Parameter: **<time>** - expressed in hundredths of a second 0..255 - factory default value is 5. Note: the delay is effective only if its value is greater than 5.
ATS25?	Read command returns the current value of **S25 parameter**.

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S25 -Delay To DTR Off	
	Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.3.7.4 Disconnect Inactivity Timer - S30

S30 -Disconnect Inactivity Timer	
ATS30=[<tout>]	Set command defines the inactivity time-out in minutes. The device disconnects if no characters are exchanged for a time period of at least **<tout>** minutes. Parameter: **<tout>** - expressed in minutes 0 - disabled, disconnection due to inactivity is disabled (factory default). 1..127 - inactivity time-out value
ATS30?	Read command returns the current value of **S30 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

3.5.3.7.5 Delay Before Forced Hang Up - S38

S38 -Delay Before Forced Hang Up	
ATS38=[<delay>]	Set command sets the delay, in seconds, between the device's receipt of **H** command (or **ON**-to-**OFF** transition of **DTR**) and the disconnect operation. Parameter: **<delay>** - acknowledge timer in units of seconds 0..254 - the device will wait **<delay>** seconds for the remote device to acknowledge all data in the device buffer before disconnecting (factory default value is 20). 255 - the device doesn't time-out and continues to attempt to deliver data in the buffer until the connection is lost or the data is delivered. Note: **<delay>** parameter can be used to ensure that data in device buffer is sent before device disconnects.
ATS38?	Read command returns the current value of **S38 parameter**. Note: the format of the numbers in output is always 3 digits, left-filled with 0s

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3.5.4 3GPP TS 27.007 AT Commands

3.5.4.1 General

3.5.4.1.1 Request Manufacturer Identification - +CGMI

+CGMI - Request Manufacturer Identification	
AT+CGMI	Execution command returns the device manufacturer identification code without command echo.
AT+CGMI=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

3.5.4.1.2 Request Model Identification - +CGMM

+CGMM - Request Model Identification	
AT+CGMM	Execution command returns the device model identification code without command echo.
AT+CGMM=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

3.5.4.1.3 Request Revision Identification - +CGMR

+CGMR - Request Revision Identification	
AT+CGMR	Execution command returns device software revision number without command echo.
AT+CGMR=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

3.5.4.1.4 Request Product Serial Number Identification - +CGSN

+CGSN - Request Product Serial Number Identification	
AT+CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, without command echo.
AT+CGSN=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

3.5.4.1.5 Select TE Character Set - +CSCS

+CSCS - Select TE Character Set	
AT+CSCS= **[<chset>]**	Set command sets the current character set used by the device. Parameter: **<chset>** - character set “GSM” - GSM default alphabet (3GPP TS 03.38/23.008) “IRA” - international reference alphabet (ITU-T T.50)

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+CSCS - Select TE Character Set	
	”8859-1” - ISO 8859 Latin 1 character set ”PCCP437” - PC character set Code Page 437 ”UCS2” - 16-bit universal multiple-octet coded character set (ISO/IEC10646)
AT+CSCS?	Read command returns the current value of the active character set.
AT+CSCS=?	Test command returns the supported values for parameter **<chset>**.
Reference	3GPP TS 27.007

3.5.4.1.6 Request International Mobile Subscriber Identity (IMSI) - +CIMI

+CIMI - Request International Mobile Subscriber Identify (IMSI)	
AT+CIMI	Execution command returns the value of the Internal Mobile Subscriber Identity stored in the SIM without command echo. Note: a SIM card must be present in the SIM card housing, otherwise the command returns **ERROR**.
AT+CIMI=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

3.5.4.1.7 PCCA STD-101 Select Wireless Network - +WS46

+WS46 - PCCA STD-101 Select Wireless Network	
AT+WS46=[<n>]	Set command selects the cellular network (Wireless Data Service, WDS) to operate with the **TA** (WDS-Side Stack Selection). Parameter: **<n>** - integer type, it is the WDS-Side Stack to be used by the **TA**. 12 GSM Digital Cellular Systems (GERAN only) 22 UTRAN only 25 3GPP Systems (both GERAN and UTRAN) (factory default) NOTE1: These 3 values are mutually exclusive. e.g. if value “25” is returned, value “12” and “22” shall not be returned. NOTE2: <n> parameter setting is stored in NVM and available at next reboot.
AT+WS46?	Read command reports the currently selected cellular network, in the format: **+ WS46: <n>**
AT+WS46=?	Test command reports the range for the parameter **<n>**.
Reference	3GPP TS 27.007

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3.5.4.2 Call Control

3.5.4.2.1 Hang Up Call - +CHUP

+CHUP - Hang Up Call	
AT+CHUP	Execution command cancels all active and held calls, also if a multi-party session is running.
AT+CHUP=?	Test command returns the **OK** result code
Reference	GSM 07.07

3.5.4.2.2 Select type of address - +CSTA

+CSTA - Select type of address	
AT+CSTA=[<type>]	Set command selects the type of number for further dialling commands (D) according to GSM/UMTS specifications. Parameter: **<type>:** type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7); default 145 when dialling string includes international access code character "+", otherwise 129
AT+CSTA?	Read command returns selected **<type>**
AT+CSTA =?	Test command returns supported **<type>**s
Reference	3GPP TS 27.007

3.5.4.2.3 Select Bearer Service Type - +CBST

+CBST - Select Bearer Service Type	
AT+CBST= **[<speed>** **[,<name>** **[,<ce>]]]**	Set command sets the bearer service **<name>** with data rate **<speed>**, and the connection element **<ce>** to be used when data calls are originated. This setting is also used during mobile terminated data call setup, in case of single numbering scheme calls (refer +CSNS). Parameters: **<speed>** - data rate 0 - autobauding (autobaud) 7 - 9600 bps (V.32) 12 - 9600 bps (V.34) 14 - 14400 bps (V.34) 16 - 28800 bps (V.34) 17 - 33600 bps (V.34) 39 - 9600 bps (V.120) 43 - 14400 bps (V.120) 48 - 28800 bps (V.120)

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+CBST - Select Bearer Service Type	
	51 - 56000 bps (V.120) 71 - 9600 bps (V.110 or X.31 flag stuffing) 75 - 14400 bps (V110 or X.31 flag stuffing) 80 - 14400 bps (V110 or X.31 flag stuffing) 81 - 38400 bps (V110 or X.31 flag stuffing) 83 - 56000 bps (V110 or X.31 flag stuffing) 84 - 64000 bps (X.31 flag stuffing) 116 - 64000 bps (bit transparent) **<name>** - bearer service name 0 - data circuit asynchronous(UDI or 3.1 kHz modem) 1 - data circuit synchronous(UDI or 3.1 kHz modem) 4 - data circuit asynchronous(RDI) **<ce>** - connection element 0 - transparent 1 - non transparent (default) **The bearer service on UC864 only has support for the following combinations:** **<GSM network>** AT+CBST= 0,0,1 (Autobaud 9.6k, non transparent) AT+CBST= 7,0,1 (V.32 9.6k, non transparent) AT+CBST=12,0,1 (V.34 9.6k, non transparent)) AT+CBST=14,0,1 (V.34 14.4k, non transparent) AT+CBST=39,0,1 (V.120 9.6k, non transparent) AT+CBST=43,0,1 (V.120 14.4k, non transparent) AT+CBST=71,0,1 (V.110 9.6k, non transparent) AT+CBST=75,0,1 (V.110 14.4k, non transparent) AT+CBST= 7,0,0 (V32 9.6k, transparent) AT+CBST=12,0,0 (V34 9.6k, transparent) AT+CBST=14,0,0 (V34 14.4k, transparent) **<WCDMA network>** AT+CBST= 0,0,1 (Autobaud 57.6k, non transparent) AT+CBST=14,0,1 (V.34 14.4k, non transparent) AT+CBST=16,0,1 (V.34 28.8k, non transparent) AT+CBST=17,0,1 (V.34 33.6k, non transparent) AT+CBST=43,0,1 (V.120 14.4k, non transparent) AT+CBST=48,0,1 (V.120 28.8k, non transparent) AT+CBST=51,0,1 (V.120 56k, non transparent) AT+CBST=75,0,1 (V.110 14.4k, non transparent) AT+CBST=80,0,1 (V.110 28.8k, non transparent) AT+CBST=81,0,1 (V.110 38.4k, non transparent) AT+CBST=83,0,1 (X.31FS 56k, non transparent) AT+CBST=83,4,1 (X.31FS 56k RDI, non transparent) AT+CBST=84,0,1 (X.31FS 64k, non transparent) AT+CBST=116,1,0 (Bit transparent 64 kbps, transparent)

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+CBST - Select Bearer Service Type	
AT+CBST?	Read command returns current value of the parameters **<speed>**, **<name>** and **<ce>**
AT+CBST=?	Test command returns the supported range of values for the parameters.
Reference	3GPP TS 27.007

3.5.4.2.4 Radio Link Protocol - +CRLP

+CRLP - Radio Link Protocol	
AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>]]]]]	Set command sets Radio Link Protocol (RLP) parameters used when non-transparent data calls are originated Parameters: **<iws>** - IWF window Dimension 1..61 - factory default value is 61 (ver 0/1) 1..488 - factory default value is 240 (ver 2) **<mws>** - MS window Dimension 1..61 - default value is 61 (ver 0/1) 1..488 - factory default value is 240 (ver 2) **<T1>** - acknowledge timer (10 ms units). 39..255 - default value is 78 (ver 0 or 1) 43..255 – deafault value is 52 (ver 2) **<N2>** - retransmission attempts 1..255 - default value is 6 (ver 0/1/2) **<ver>** - protocol version 0..2
AT+CRLP?	Read command returns current settings for each supported RLP version **<ver>**. +CRLP : <iws>,<mws>,<T1>,<N2> +CRLP : <iws>,<mws>,<T1>,<N2>,<ver> OK
AT+CRLP=?	Test command returns the range of setting value for each supported RLP version **<ver>**.
Reference	3GPP TS 27.007
Note	Versions 0 and 1 share the same parameter set. Read and Test commands shall return only one line for this set (where **<ver>** is not present)

3.5.4.2.5 Service Reporting Control - +CR

+CR - Service Reporting Control	
AT+CR=[<mode>]	Set command controls whether or not intermediate result code **+CR** is returned from **TA** to **TE**.

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+CR - Service Reporting Control	
	Parameter: **<mode>** 0 - disables **+CR** reporting (factory default) 1 - enables **+CR** reporting: the intermediate result code is transmitted at the point during connect negotiation at which the **TA** has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code **CONNECT** is transmitted. Its format is: **+CR: <serv>** where: **<serv>** ASYNC - asynchronous transparent SYNC - synchronous transparent REL ASYNC - asynchronous non-transparent REL SYNC - synchronous non-transparent. Note: this command replaces V.25ter [14] command Modulation Reporting Control (**+MR**), which is not appropriate for use with a UMTS terminal.
AT+CR?	Read command returns whether or not intermediate result code **+CR** is enabled, in the format: **+CR: <mode>**
AT+CR=?	Test command returns the supported range of values of parameter **<mode>**.
Reference	3GPP TS 27.007

3.5.4.2.6 Extended Error Report - +CEER

+CEER - Extended Error Report	
AT+CEER	Execution command returns one or more lines of information text **<report>** offering the TA user an extended error report, in the format: **+CEER: <report>** This report regards some error condition that may occur: - the failure in the last unsuccessful call setup (originating or answering) - the last call release - the last unsuccessful GPRS attach or unsuccessful PDP context activation, - the last GPRS detach or PDP context deactivation. Note: if none of this condition has occurred since power up then No Error condition is reported
AT+CEER=?	Test command returns **OK** result code.
Reference	3GPP TS 27.007

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3.5.4.2.7 Cellular Result Codes - +CRC

+CRC - Cellular Result Codes	
AT+CRC= [<mode>]	Set command controls whether or not the extended format of incoming call indication is used. Parameter: **<mode>** 0 - disables extended format reporting (factory default) 1 - enables extended format reporting: When enabled, an incoming call is indicated to the **TE** with unsolicited result code **+CRING: <type>** instead of the normal **RING**. where **<type>** - call type: ASYNC - asynchronous transparent data SYNC - synchronous transparent data REL ASYNC - asynchronous non-transparent data REL SYNC - synchronous non-transparent data FAX - facsimile (TS 62) VOICE - normal voice (TS 11)
AT+CRC?	Read command returns current value of the parameter **<mode>**.
AT+CRC=?	Test command returns supported values of the parameter **<mode>**.
Reference	3GPP TS 27.007

3.5.4.2.8 Single Numbering Scheme - +CSNS

+CSNS - Single Numbering Scheme	
AT+CSNS= [<mode>]	Set command selects the bearer to be used when mobile terminated single numbering scheme call is established. Parameter values set with **+CBST** command shall be used when **<mode>** equals to a data service. Parameter: **<mode>** 0 - voice (factory default) 2 - fax (TS 62) 4 - data Note: if **+CBST** parameter is set to a value that is not applicable to single numbering calls, ME/TA shall map the value to the closest valid one. E.g. if user has set **<speed>=71**, **<name>=0** and **<ce>=1** (non-trasparent

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+CSNS - Single Numbering Scheme	
	asynchronous 9600 bps V.110 ISDN connection) for mobile originated calls, ME/TA shall map the values into non-trasparent asynchronous 9600 bps V.32 modem connection when single numbering scheme call is answered.
AT+CSNS?	Read command returns current value of the parameter **<mode>**.
AT+CSNS=?	Test command returns supported values of parameter **<mode>**.
Reference	3GPP TS 27.007

3.5.4.2.9 Voice Hang Up Control - +CVHU

+CVHU - Voice Hang Up Control	
AT+CVHU= **[<mode>]**	Set command selects whether **ATH** or "**drop DTR**" shall cause a voice connection to be disconnected or not. Parameter: **<mode>** 0 - "**Drop DTR**" ignored but **OK** result code given. **ATH** disconnects. 1 - "**Drop DTR**" and **ATH** ignored but **OK** result code given. 2 - "**Drop DTR**" behaviour according to **&D** setting. **ATH** disconnects (factory default).
AT+CVHU?	Read command reports the current value of the **<mode>** parameter, in the format: **+CVHU: <mode>**
AT+CVHU=?	Test command reports the range of supported values for parameter **<mode>**

3.5.4.3 Network Service Handling

3.5.4.3.1 Subscriber Number - +CNUM

+CNUM - Subscriber Number	
AT+CNUM	Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format: **+CNUM: <alpha>**,**<number>**,**<type>[<CR><LF>** **+CNUM: <alpha>**,**<number>**,**<type>[…]]** where: **<alpha>** - alphanumeric string associated to **<number>**; used character set should be the one selected with **+CSCS**. **<number>** - string containing the phone number in the format **<type>** **<type>** - type of number: 129 - national numbering scheme 145 - international numbering scheme (contains the character "+").

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+CNUM - Subscriber Number	
AT+CNUM=?	Test command returns the **OK** result code
Example	AT+CNUM +CNUM: "PHONENUM1","2173848500",129 +CNUM: "FAXNUM","2173848501",129 +CNUM: "DATANUM","2173848502",129
Reference	3GPP TS 27.007

3.5.4.3.2 Read Operator Names - +COPN

+COPN - Read Operator Names	
AT+COPN	Execution command returns the list of operator names from the **ME** in the format: **+COPN: <numeric1>,<alpha1>[<CR><LF>** **+COPN: <numeric2>,<alpha2>[…]]** where: **<numeric*n*>** - string type, operator in numeric format (see **+COPS**) **<alpha*n*>** - string type, operator in long alphanumeric format (see **+COPS**) Note: each operator code **<numeric*n*>** that has an alphanumeric equivalent **<alpha*n*>** in the ME memory is returned
AT+COPN=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.3.3 Network Registration Report - +CREG

+CREG - Network Registration Report	
AT+CREG= **[<mode>]**	Set command enables/disables network registration reports depending on the parameter **<mode>**. Parameter: **<mode>** 0 - disable network registration unsolicited result code (factory default) 1 - enable network registration unsolicited result code 2 - enable network registration unsolicited result code with network Cell identification data If **<mode>=1**, network registration result code reports: **+CREG: <stat>** where **<stat>** 0 - not registered, ME is not currently searching a new operator to register to

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+CREG - Network Registration Report	
	1 - registered, home network 2 - not registered, but ME is currently searching a new operator to register to 3 - registration denied 4 -unknown 5 - registered, roaming If **<mode>=2**, network registration result code reports: **+CREG: <stat>[**,**<Lac>**,**<Ci>]** where: **<Lac>** - Local Area Code for the currently registered on cell **<Ci>** - Cell Id for the currently registered on cell Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CREG?	Read command reports the **<mode>** and **<stat>** parameter values in the format: **+CREG: <mode>,<stat>[,<Lac>,<Ci>]** Note: **<Lac>** and **<Ci>** are reported only if **<mode>=2** and the mobile is registered on some network cell.
AT+CREG=?	Test command returns the range of supported **<mode>**
Example	AT OK at+creg? +CREG: 0,2 OK *(the MODULE is in network searching state)* at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,2 OK at+creg? +CREG: 0,1 OK *(the MODULE is registered)* at+creg?

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+CREG - Network Registration Report	
	+CREG: 0,1 OK
Reference	3GPP TS 27.007

3.5.4.3.4 Operator Selection - +COPS

+COPS - Operator Selection	
AT+COPS= [<mode> [,<format> [,<oper>>[,< AcT>]]]]	Set command forces an attempt to select and register the GSM\UMTS network operator. **<mode>** parameter defines whether the operator selection is done automatically or it is forced by this command to operator **<oper>**. The operator **<oper>** shall be given in format **<format>**. Parameters: **<mode>** 0 - automatic choice (the parameter **<oper>** will be ignored) (factory default) 1 - manual choice (**<oper>** field shall be present) 2 - deregister from the network; the MODULE is kept unregistered until a **+COPS** with **<mode>=0, 1** or **4** is issued 3 - set only **<format>** parameter (the parameter **<oper>** will be ignored) 4 - manual/automatic (**<oper>** field shall be present); if manual selection fails, automatic mode (**<mode>=0**) is entered **<format>** 0 - alphanumeric long form (max length 16 digits) 1 - short format alphanumeric <oper> 2 - numeric 5 digits [country code (3) + network code (2)] **<oper>**: network operator in format defined by **<format>** parameter. Note: **<mode>** parameter setting is stored in NVM and available at next reboot, if it is not **3** (i.e.: set only **<format>** parameter). Note: if **<mode>=1 or 4**, the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted) Note: **<format>** parameter setting is never stored in NVM **<AcT>** access technology selected: 0 GSM 2 UTRAN
AT+COPS?	Read command returns current value of **<mode>**,**<format>** and **<oper>** in format **<format>**; if no operator is selected, **<format>** and **<oper>** are omitted **+COPS: <mode>**[, **<format>**, **<oper>**],[,< AcT>]]

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+COPS - Operator Selection	
AT+COPS=?	Test command returns a list of quadruplets, each representing an operator present in the network. The quadruplets in the list are separated by commas: **+COPS:** : [list of supported (<stat>,long alphanumeric <oper> ,short alphanumeric <oper>,numeric <oper>[,< AcT>])s] [,,(list of supported <mode>s),(list of supported <format>s)] where: **<stat>** - operator availability 0 - unknown 1 - available 2 - current 3 - forbidden **<AcT>** access technology selected: 0 GSM 1 GSM Compact 2 UTRAN Note: since with this command a network scan is done, this command may require some seconds before the output is given.

Example	`AT+COPS?`
	`+COPS: 0,0,"Test PLMN 1-1",0`
	
	`OK`
	`at+cops=?`
	`+COPS: (2,"","","45008",2),(1,"Test PLMN 1-1","Test1-1","00101",0),(3,"","","45005",2),,(0-4),(0-2)`
	
	`OK`

Reference	3GPP TS 27.007

3.5.4.3.5 Facility Lock/Unlock - +CLCK

+CLCK - Facility Lock/Unlock	
AT+CLCK= <fac>,<mode> [,<passwd> [,<class>]]	Execution command is used to lock or unlock a **ME** or a network facility. Parameters: **<fac>** - facility "SC" - SIM (PIN request) (device asks SIM password at power-up and when this lock command issued) "AO"- BAOC (Barr All Outgoing Calls) "OI" - BOIC (Barr Outgoing International Calls) "OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country) "AI" - BAIC (Barr All Incoming Calls)

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+CLCK - Facility Lock/Unlock	
	"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "AB" - All Barring services (applicable only for **<mode>=0**) "AG" - All outGoing barring services (applicable only for **<mode>=0**) "AC" - All inComing barring services (applicable only for **<mode>=0**) "FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as **<passwd>**) "PN" - network Personalisation "PU" - network subset Personalisation "PP" - service Provider Personalization (refer 3GPP TS 22.022 [33]) "PC" - Corporate Personalization (refer 3GPP TS 22.022 [33]) "PF" - lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT asks password when other than the first SIM/UICC card is inserted) **<mode>** - defines the operation to be done on the facility 0 - unlock facility 1 - lock facility 2 - query status **<passwd>** - shall be the same as password specified for the facility from the **DTE** user interface or with command Change Password **+CPWD** **<class>** - sum of integers each representing a class of information (default is 7) 1 - voice (telephony) 2 - data (refers to all bearer services) 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access Note: when **<mode>=2** and command successful, it returns: **+CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[...]]** where **<status>** - the current status of the facility 0 - not active 1 - active **<class*n*>** - class of information of the facility
AT+CLCK=?	Test command reports all the facilities supported by the device.
Reference	3GPP TS 27.007
Example	*Querying such a facility returns an output on three rows, the first for voice, the second for data, the third for fax:*

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+CLCK - Facility Lock/Unlock	
	AT+CLCK =”A0”,2 +CLCK: <status>,1 +CLCK: <status>,2 +CLCK: <status>,4

3.5.4.3.6 Change Facility Password - +CPWD

+CPWD - Change Facility Password	
AT+CPWD=<fac>, <oldpwd>, <newpwd>	Execution command changes the password for the facility lock function defined by command Facility Lock **+CLCK**. Parameters: **<fac>** - facility “SC” - SIM (PIN request) “AB” - All barring services “P2” - SIM PIN2 **<oldpwd>** - string type, it shall be the same as password specified for the facility from the ME user interface or with command **+CPWD**. **<newpwd>** - string type, it is the new password Note: parameter **<oldpwd>** is the old password while **<newpwd>** is the new one.
AT+CPWD=?	Test command returns a list of pairs **(<fac>,<pwdlength>)** which presents the available facilities and the maximum length of their password (**<pwdlength>**)
Example	at+cpwd=? +CPWD: ("SC",8),("AB",4),("P2",8),("PS",8) OK
Reference	3GPP TS 27.007

3.5.4.3.7 Calling Line Identification Presentation - +CLIP

+CLIP - Calling Line Identification Presentation	
AT+CLIP=[<n>]	Set command enables/disables the presentation of the CLI (Calling Line Identity) at the **TE**. This command refers to the UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call. Parameters: **<n>** 0 - disables CLI indication (factory default) 1 - enables CLI indication

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+CLIP - Calling Line Identification Presentation	
	If enabled the device reports after each RING the response: **+CLIP: <number>,<type>,"",128,<alpha>,<CLI_validity>** where: **<number>** - string type phone number of format specified by **<type>** **<type>** - type of address octet in integer format 128 - both the type of number and the numbering plan are unknown 129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "**+**") **<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with command Select **TE** character set **+CSCS**. **<CLI_validity>** 0 - CLI valid 1 - CLI has been withheld by the originator. 2 - CLI is not available due to interworking problems or limitation or originating network. Note: in the **+CLIP:** response they are currently not reported either the **subaddress** information (it's always **""** after the 2nd comma) and the **subaddress type** information (it's always **128** after the 3rd comma)
AT+CLIP?	Read command returns the presentation status of the CLI in the format: **+CLIP: <n>**,**<m>** where: **<n>** 0 - CLI presentation disabled 1 - CLI presentation enabled **<m>** - status of the CLIP service on the UMTS network 0 - CLIP not provisioned 1 - CLIP provisioned 2 - unknown (e.g. no network is present) Note: This command issues a status request to the network, hence it may take a few seconds to give the answer due to the time needed to exchange data with it.
AT+CLIP=?	Test command returns the supported values of parameter **<n>**
Reference	3GPP TS 27.007
Note	The command changes only the report behaviour of the device, it does not change CLI supplementary service setting on the network.

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3.5.4.3.8 Calling Line Identification Restriction - +CLIR

+CLIR - Calling Line Identification Restriction	
AT+CLIR=[<n>]	Set command overrides the CLIR subscription when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command. This command refers to CLIR-service (3GPP TS 02.81/21.081) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call. Parameter: **<n>** - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent)
AT+CLIR?	Read command gives the default adjustment for all outgoing calls (**<n>**) and also triggers an interrogation of the provision status of the CLIR service (**<m>**), where **<n>** - facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent) **<m>** - facility status on the Network 0 - CLIR service not provisioned 1 - CLIR service provisioned permanently 2 - unknown (e.g. no network present, etc.) 3 - CLI temporary mode presentation restricted 4 - CLI temporary mode presentation allowed
AT+CLIR=?	Test command reports the supported values of parameter **<n>**.
Reference	3GPP TS 27.007
Note	This command sets the default behaviour of the device in outgoing calls.

3.5.4.3.9 Connected line identification presentation - COLP

+COLP - Connected line identification presentation	
AT+COLP=[<n>]	Set command enables or disables the presentation of the COL at the TE Parameter: **<n>** 0 - disable 1 - enable Note: When enabled (and called subscriber allows), +COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate result code is returned from TA to TE before any +CR or V.25ter [14] responses. It is manufacturer specific if this response is used when normal voice call is established.

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+COLP - Connected line identification presentation	
AT+COLP?	Read command gives the status of <n>, and also triggers an interrogation of the provision status of the COLP service according 3GPP TS 22.081 [3] (given in <m>). +COLP: <n>,<m> Where, **<n>** 0 – disable 1 – enable **<m>** 0 - COLP not provisioned 1 - COLP provisioned 2 - unknown (e.g. no network, etc.)
AT+COLP=?	Test command returns supported parameters **<n>**
Reference	3GPP TS 27.007

3.5.4.3.10 Call Forwarding Number And Conditions - +CCFC

+CCFC - Call Forwarding Number And Condition	
AT+CCFC= <reason>, <cmd>[,<number>[, <type>[,<class> [,,,<time>]]]	Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported. Parameters: **<reason>** 0 - unconditional 1 - mobile busy 2 - no reply 3 - not reachable 4 - all calls (not with query command) 5 - all conditional calls (not with query command) **<cmd>** 0 - disable 1 - enable 2 - query status 3 - registration 4 - erasure **<number>** - string type phone number of forwarding address in format specified by **<type>** parameter **<type>** - type of address octet in integer format : 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**")

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+CCFC - Call Forwarding Number And Condition	
	<class> - sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax) 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access **<time>** - time in *seconds* to wait before call is forwarded; it is valid only when **<reason>** "no reply" is enabled (**<cmd>**=1) or queried (**<cmd>**=2) 1..30 - automatically rounded to a multiple of 5 seconds (default is 20) Note: when **<cmd>=2** and command successful, it returns: **+CCFC: <status>,<class1>[,<number>,<type>[,,,<time>]][<CR><LF>** **+CCFC: <status>,<class2>[,<number>,<type>[,,,<time>]][…]]** where: **<status>** - current status of the network service 0 - not active 1 - active **<class*n*>** - same as **<class>** **<time>** - it is returned only when **<reason>**=2 (“no reply”) and **<cmd>**=2. The other parameters are as seen before.
AT+CCFC=?	Test command reports supported values for the parameter **<reason>**.
Reference	3GPP TS 27.007
Note	When querying the status of a network service **(<cmd>=2**) the response line for 'not active' case **(<status>=0**) should be returned only if service is not active for any **<class>**.

3.5.4.3.11 Call Waiting - +CCWA

+CCWA - Call Waiting	
AT+CCWA= **[<n>[,<cmd>** **[,<class>]]]**	Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query are supported. Parameters: **<n>** - enables/disables the presentation of an unsolicited result code: 0 - disable 1 - enable **<cmd>** - enables/disables or queries the service at network level: 0 - disable

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+CCWA - Call Waiting	
	1 - enable 2 - query status **<class>** - is a sum of integers each representing a class of information which the command refers to; default is 7 (**voice + data + fax**) 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access Note: the response to the query command is in the format: **+CCWA: <status>,<class1>[<CR><LF>** **+CCWA: <status>,<class2>[…]]** where **<status>** represents the status of the service: 0 - inactive 1 - active **<class*n*>** - same as **<class>** Note: the unsolicited result code enabled by parameter **<n>** is in the format:: **+CCWA: <number>,<type>,<class>,[<alpha>][,<cli_validity>]** where: **<number>** - string type phone number of calling address in format specified by **<type>** **<type>** - type of address in integer format **<class>** - see before **<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with **+CSCS**. **<cli_validity>** 0 - CLI valid 1 - CLI has been withheld by the originator 2 - CLI is not available due to interworking problems or limitations of originating network Note: if parameter **<cmd>** is omitted then network is not interrogated. Note: in the query command the class parameter must not be issued. Note: the difference between call waiting report disabling (**AT+CCWA =**

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+CCWA - Call Waiting	
	0,1,7) and call waiting service disabling (**AT+CCWA = 0,0,7**) is that in the first case the call waiting indication is sent to the device by network but this last one does not report it to the **DTE**; instead in the second case the call waiting indication is not generated by the network. Hence the device results busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party. Note: The command **AT+CCWA=1,0** has no effect a non sense and must not be issued..
AT+CCWA?	Read command reports the current value of the parameter **<n>**.
AT+CCWA=?	Test command reports the supported values for the parameter **<n>**.
Reference	3GPP TS 27.007

3.5.4.3.12 Call Holding Services - +CHLD

+CHLD - Call Holding Services	
AT+CHLD=[<n>]	Execution command controls the network call hold service. With this service it is possible to disconnect temporarily a call and keep it suspended while it is retained by the network, contemporary it is possible to connect another party or make a multiparty connection. Parameter: **<n>** 0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call. (only from version D) 1 - releases all active calls (if any exist), and accepts the other (held or waiting) call 1X - releases a specific active call X 2 - places all active calls (if any exist) on hold and accepts the other (held or waiting) call. 2X - places all active calls on hold except call X with which communication shall be supported (only from version D). 3 - adds an held call to the conversation 4 - Connects the two calls and disconnects the subscriber from both calls (ECT). Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number. Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation.
AT+CHLD=?	Test command returns the list of supported **<n>s**. **+CHLD: (0,1,1X,2,2X,3,4)**
Reference	3GPP TS 27.007

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+CHLD - Call Holding Services	
Note	ONLY for VOICE calls

3.5.4.3.13 Unstructured Supplementary Service Data - +CUSD

+CUSD - Unstructured Supplementary Service Data	
AT+CUSD= [<n>[,<str> [,<dcs>]]]	Set command allows control of the Unstructured Supplementary Service Data (USSD [3GPP TS 02.90/22.090]). Parameters: **<n>** - is used to disable/enable the presentation of an unsolicited result code. 0 - disable the result code presentation in the **DTA** 1 - enable the result code presentation in the **DTA** 2 - cancel an ongoing USSD session (not applicable to read command response) **<str>** - USSD-string (when **<str>** parameter is not given, network is not interrogated) - If **<dcs>** indicates that 3GPP TS 3.38/23.038 default alphabet is used **ME/TA** converts GSM alphabet into current TE character set (see **+CSCS**). - If **<dcs>** indicates that 8-bit data coding scheme is used: **ME/TA** converts each 8-bit octet into two IRA character long hexadecimal number; e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65). **<dcs>** - 3GPP TS 3.38/23.038 Cell Broadcast Data Coding Scheme in integer format (default is 0). Note: the unsolicited result code enabled by parameter **<n>** is in the format: **+CUSD: <m>[,<str>,<dcs>]** to the TE where: **<m>**: 0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation). 1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation) 2 - USSD terminated by the network 3 - other local client has responded 4 - operation not supported 5 - network time out
AT+CUSD?	Read command reports the current value of the parameter **<n>**
AT+CUSD=?	Test command reports the supported values for the parameter **<n>**
Reference	3GPP TS 27.007

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+CUSD - Unstructured Supplementary Service Data	
Note	Only mobile initiated operations are supported

3.5.4.3.14 Advice Of Charge - +CAOC

+CAOC - Advice Of Charge	
AT+CAOC= <mode>	Set command refers to the Advice of Charge supplementary services that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information. Parameter: **<mode>** 0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting Note: the unsolicited result code enabled by parameter **<mode>** is in the format: **+CCCM: <ccm>** where: **<ccm>** - current call meter in home units, string type: three bytes of the CCM value in hexadecimal format (e.g. “00001E” indicates decimal value 30) Note: the unsolicited result code **+CCCM** is sent when the CCM value changes, but not more than every 10 seconds.
AT+CAOC?	Read command reports the value of parameter **<mode>** in the format: **+CAOC: <mode>**
AT+CAOC=?	Test command reports the supported values for **<mode>** parameter.
Reference	3GPP TS 27.007
Note	**+CAOC** command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI or AOCC supplementary services; it is not stored in the SIM.

3.5.4.3.15 List Current Calls - +CLCC

+CLCC - List Current Calls	
AT+CLCC	Execution command returns the list of current calls and their characteristics in the format: **[+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,<number>,<type> ,<alpha>[<CR><LF>+CLCC:<id2>,<dir>,<stat>,<mode>, <mpty>,<number>,<type>,<alpha>[…]]]**

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+CLCC - List Current Calls	
	where: **<id*n*>** - call identification number **<dir>** - call direction 0 - mobile originated call 1 - mobile terminated call **<stat>** - state of the call 0 - active 1 - held 2 - dialing (**MO** call) 3 - alerting (**MO** call) 4 - incoming (**MT** call) 5 - waiting (**MT** call) **<mode>** - call type 0 - voice 1 - data 2 - fax 9 - unknown **<mpty>** - multiparty call flag 0 - call is not one of multiparty (conference) call parties 1 - call is one of multiparty (conference) call parties **<number>** - string type phone number in format specified by **<type>** **<type>** - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") **<alpha>** - string type; alphanumeric representation of **<number>** corresponding to the entry found in phonebook; used character set should be the one selected with **+CSCS**. Note: If no call is active then only **OK** message is sent. This command is useful in conjunction with command **+CHLD** to know the various call status for call holding.
AT+CLCC=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.3.16 SS Notification - +CSSN

+CSSN - SS Notification	
AT+CSSN=[<n>[,<m>]]	It refers to supplementary service related network initiated notifications. Set command enables/disables the presentation of notification result codes from **TA** to **TE**. Parameters: **<n>** - sets the **+CSSI** result code presentation status 0 - disable 1 - enable **<m>** - sets the **+CSSU** result code presentation status

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+CSSN - SS Notification	
	0 - disable 1 - enable When **<n>**=1 and a supplementary service notification is received after a mobile originated call setup, an unsolicited code: **+CSSI: <code1>** is sent to **TE** before any other **MO** call setup result codes, where: **<code1>**: 0 - unconditional call forwarding is active 1 - some of the conditional call forwardings are active 2 - call has been forwarded 3 - call is waiting 5 - outgoing calls are barred 6 - incoming calls are barred When **<m>=1** and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code: **+CSSU: <code2>** is sent to **TE**, where: **<code2>**: 0 - this is a forwarded call (**MT** call setup) 2 - call has been put on hold (during a voice call) 3 - call has been retrieved (during a voice call). 4 - multiparty call entered (during a voice call) 5 - call on hold has been released (this is not a SS notification) (during a voice call)
AT+CSSN?	Read command reports the current value of the parameters.
AT+CSSN=?	Test command reports the supported range of values for parameters **<n>**, **<m>**.
Reference	3GPP TS 27.007

3.5.4.3.17 Closed User Group Supplementary Service Control - +CCUG

+CCUG - Closed User Group Supplementary Service Control	
AT+CCUG= [<n>[,<index> [,<info>]]]	Set command allows control of the Closed User Group supplementary service [3GPP TS 02.85/22.085]. Parameters: **<n>** 0 - disable CUG temporary mode (factory default). 1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing

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+CCUG - Closed User Group Supplementary Service Control	
	calls. **<index>** 0..9 - CUG index 10 - no index (preferential CUG taken from subscriber data) (default) **<info>** 0 - no information (default) 1 - suppress Outgoing Access (OA) 2 - suppress preferential CUG 3 - suppress OA and preferential CUG
AT+CCUG?	Read command reports the current value of the parameters
AT+CCUG=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.3.18 Preferred Operator List - +CPOL

+CPOL - Preferred Operator List	
AT+CPOL=[<index>][,<format>[,<oper>][,<GSM_AcT>,<GSM_Compact_AcT>,<UTRAN_AcT]]	Execution command writes an entry in the SIM list of preferred operators. Parameters: **<index>** - integer type; the order number of operator in the SIM preferred operator list 1..*n* **<format>** 0 – long format alphanumeric **<oper>** 1 – short format alphanumeric **<oper>** 2 - numeric **<oper>** <oper> - string type **<GSM_AcT>** - GSM access technology 0 – access technology not selected 1 – access technology selected **<GSM_Compact_AcT>** - GSM compact access technology 0 – access technology not selected 1 – access technology selected **<UTRA_AcT>** - UTRA acess technology 0 – access technology not selected 1 – access technology selected Note: if **<index>** is given but **<oper>** is left out, entry is deleted. If **<oper>** is given but **<index>** is left out, **<oper>** is put in the next free location. If only **<format>** is given, the format of the **<oper>** in the read command is changed. Currently, **<GSM_Compact_AcT>** is not supported but set value is acceptable.
AT+CPOL?	Read command returns all used entries from the SIM list of preferred operators.

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+CPOL - Preferred Operator List	
AT+CPOL=?	Test command returns the whole **<index>** range supported by the SIM and the range for the parameter **<format>**
Reference	3GPP TS 27.007

3.5.4.3.19 Selection of preferred PLMN list - CPLS

+CPLS - Selection of preferred PLMN list +CPLS	
AT+CPLS=<list>	Set command select one PLMN selector with Access Technology list in the SIM card or active application in the UICC(GSM or USIM), that is used by +CPOL command. Parameter: **<list>**: 0 - User controlled PLMN selector with Access Technology EFPLMNwAcT, if not found in the SIM/UICC then PLMN preferred list EFPLMNsel (this file is only available in SIM card or GSM application selected in UICC) 1- Operator controlled PLMN selector with Access Technology EFOPLMNwAcT 2 - HPLMN selector with Access Technology EFHPLMNwAcT
AT+CPLS?	Read command returns the selected PLMN selector list from the SIM/USIM +CPLS: <list>
AT+CPLS =?	Test command returns the whole index range supported lists by the SIM./USIM
Reference	3GPP TS 27.007

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3.5.4.4 Mobile Equipment Control

3.5.4.4.1 Phone Activity Status - +CPAS

+CPAS - Phone Activity Status	
AT+CPAS	Execution command reports the device status in the form: **+CPAS: <pas>** Where: **<pas>** - phone activity status 0 - ready (device allows commands from **TA/TE**) 1 - unavailable (device does not allow commands from **TA/TE**) 2 - unknown (device is not guaranteed to respond to instructions) 3 - ringing (device is ready for commands from **TA/TE**, but the ringer is active) 4 - call in progress (device is ready for commands from **TA/TE**, but a call is in progress)
AT+CPAS=?	Test command reports the supported range of values for **<pas>**. Note: although **+CPAS** is an execution command, 3gpp TS 27.007 requires the Test command to be defined.
Example	ATD03282131321; OK AT+CPAS +CPAS: 4 *the called phone has answered to your call* OK ATH OK
Reference	3GPP TS 27.007

3.5.4.4.2 Set Phone Functionality - +CFUN

+CFUN - Set Phone Functionality	
AT+CFUN= [<fun>[,<rst>]]	Set command selects the level of functionality in the ME. Parameters: **<fun>** - is the power saving function mode 0 - minimum functionality, NON-CYCLIC SLEEP mode: in this mode, the AT interface is not accessible. Consequently, once you have set **<fun>** level 0, do not send further characters. Otherwise these characters remain in the input buffer and may delay the output of an unsolicited result code. The first wake-up event stops power saving and takes the ME back to full functionality level **<fun>=1**. 1 - mobile full functionality with power saving disabled (factory default) 2 - disable TX

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+CFUN - Set Phone Functionality	
	4 - disable both TX and RX 5 - mobile full functionality with power saving enabled **<rst>** - reset flag 0 - do not reset the ME before setting it to **<fun>** functionality level Note: issuing **AT+CFUN=4[,0]** actually causes the module to perform either a network deregistration and a SIM deactivation. Note: if power saving enabled, it reduces the power consumption during the idle time, thus allowing a longer standby time with a given battery capacity. Note: to place the module in power saving mode, set the **<fun>** parameter at value = 5 and the line **DTR** (RS232) must be set to **OFF**. Once in power saving, the **CTS** line switch to the **OFF** status to signal that the module is really in power saving condition. During the power saving condition, before sending any **AT** command on the serial line, the **DTR** must be enabled and it must be waited for the **CTS** (RS232) line to go in **ON** status. Until the **DTR** line is **ON**, the module will not return back in the power saving condition. Note: the power saving function does not affect the network behavior of the MODULE, even during the power save condition the module remains registered on the network and reachable for incoming calls or SMS. If a call incomes during the power save, then the module will wake up and proceed normally with the unsolicited incoming call code
AT+CFUN?	Read command reports the current setting of **<fun>**.
AT+CFUN=?	Test command returns the list of supported values for **<fun>** and **<rst>**.
Reference	3GPP TS 27.007

3.5.4.4.3 Enter PIN - +CPIN

+CPIN - Enter PIN	
AT+CPIN=<pin>[,<newpin>]	Set command sends to the device a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN required is SIM PUK or SIM PUK2, the **<newpin>** is required. This second pin, **<newpin>** will replace the old pin in the SIM. The command may be used to change the SIM PIN by sending it with both parameters **<pin>** and **<newpin>** when PIN request is pending; if no PIN request is pending the command will return an error code and to change the PIN the command **+CPWD** must be used instead. Parameters: **<pin>** - string type value **<newpin>** - string type value.

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+CPIN - Enter PIN	
	To check the status of the PIN request use the command **AT+CPIN?** Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.
AT+CPIN?	Read command reports the PIN/PUK/PUK2 request status of the device in the form: **+CPIN: <code>** where: **<code>** - PIN/PUK/PUK2 request status code READY - ME is not pending for any password SIM PIN - ME is waiting SIM PIN to be given SIM PUK - ME is waiting SIM PUK to be given PH-SIM PIN - ME is waiting phone-to-SIM card password to be given PH-FSIM PIN - ME is waiting phone-to-very first SIM card password to be given PH-FSIM PUK - ME is waiting phone-to-very first SIM card unblocking password to be given SIM PIN2 - ME is waiting SIM PIN2 to be given; this **<code>** is returned only when the last executed command resulted in PIN2 authentication failure (i.e. **+CME ERROR: 17**) SIM PUK2 - ME is waiting SIM PUK2 to be given; this **<code>** is returned only when the last executed command resulted in PUK2 authentication failure (i.e. **+CME ERROR: 18**) PH-NET PIN - ME is waiting network personalization password to be given PH-NET PUK - ME is waiting network personalization unblocking password to be given PH-NETSUB PIN - ME is waiting network subset personalization password to be given PH-NETSUB PUK - ME is waiting network subset personalization unblocking password to be given PH-SP PIN - ME is waiting service provider personalization password to be given PH-SP PUK - ME is waiting service provider personalization unblocking password to be given PH-CORP PIN - ME is waiting corporate personalization password to be given PH-CORP PUK - ME is waiting corporate personalization unblocking password to be given Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the command **AT+CLCK=SC,<mode>,<pin>**

Example	`AT+CMEE=1`
	`OK`
	`AT+CPIN?`
	`+CME ERROR: 10` *`error: you have to insert the SIM`*
	`AT+CPIN?`

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+CPIN - Enter PIN	
	`+CPIN: READY` *you inserted the SIM and device is not waiting for PIN to be given* OK
Note	What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK **A** **&K** **+FCLASS** **+CPIN** **D** **&N** **+GCAP** **+CSQ** **H** **&P** **+GCI** **+CIND** **O** **&S** **+IPR** **+CMER** **E** **&V** **+IFC** **+CCLK** **I** **&W** **+ILRR** **+CALA** **L** **&Y** **+ICF** **+CALD** **M** **&Z** **+MS** **+CRSM** **P** **%E** **+DS** **+CALM** **Q** **%L** **+DR** **+CRSL** **S** **%Q** **+CGMI** **+CLVL** **T** **\Q** **+CGMM** **+CMUT** **V** **\R** **+CGMR** **+CLAC** **X** **\V** **+GMI** **+CMEE** **Z** **#CGMI** **+GMM** **+CGREG** **&C** **#CGMM** **+GMR** **+CBC** **&D** **#CGMR** **+CGSN** **+CSDH** **&F** **#CGSN** **+GSN** **+CNMI** **+COPS** **#CAP** **+CHUP** **+CRC** **+CLIP** **#SHDN** **+CRLP** **+CSNS** **+CPAS** **#GPIO** **+CR** **+CREG** **#ADC** **+CFUN** All the above commands, but the ones in the grayed cells, can be issued even if the SIM card is not inserted yet. All the above commands, but **+CSDH** and **+CNMI**, can be issued even if ME is waiting for phone-To-SIM card password to be given
Reference	3GPP TS 27.007

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3.5.4.4.4 Signal Quality - +CSQ

+CSQ - Signal Quality	
AT+CSQ	Execution command reports received signal quality indicators in the form: **+CSQ: <rssi>**,**<ber>** where **<rssi>** - received signal strength indication 0 - (-113) dBm or less 1 - (-111) dBm 2..30 - (-109)dBm..(-53)dBm / 2 dBm per step 31 - (-51)dBm or greater 99 - not known or not detectable **<ber>** - bit error rate (in percent) 0 - less than 0.2% 1 - 0.2% to 0.4% 2 - 0.4% to 0.8% 3 - 0.8% to 1.6% 4 - 1.6% to 3.2% 5 - 3.2% to 6.4% 6 - 6.4% to 12.8% 7 - more than 12.8% 99 - not known or not detectable Note: this command should be used instead of the **%Q** and **%L** commands, since GSM/WCDMA relevant parameters are the radio link ones and no line is present, hence **%Q** and **%L** have no meaning. Currently **<ber>** is available only in GSM network
AT+CSQ=?	Test command returns the supported range of values of the parameters **<rssi>** and **<ber>**. Note: although **+CSQ** is an execution command without parameters, 3GPP TS 27.007 requires the Test command to be defined.
Reference	3GPP TS 27.007

3.5.4.4.5 Indicator Control - +CIND

+CIND - Indicator Control	
AT+CIND= **[<state>** **[,<state>[,…]]]**	Set command is used to control the registration state of ME indicators, in order to automatically send the **+CIEV** URC, whenever the value of the associated indicator changes. The supported indicators (**<descr>**) and their order appear from test command **AT+CIND=?** Parameter: **<state>** - registration state 0 - the indicator is deregistered; there's no unsolicited result code (**+CIEV** URC) automatically sent by the ME to the application, whenever the

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+CIND - Indicator Control	
	value of the associated indicator changes; the value can be directly queried with **+CIND?** 1 - the indicator is registered: an unsolicited result code (**+CIEV** URC) is automatically sent by the ME to the application, whenever the value of the associated indicator changes; it is still possible to query the value through **+CIND?** (default)
AT+CIND?	Read command returns the current value of ME indicators, in the format: **+CIND: <ind>[,<ind>[,…]]** Note: the order of the values **<ind>s** is the same as that in which the associated indicators appear from test command **AT+CIND=?**
AT+CIND=?	Test command returns pairs, where string value **<descr>** is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator, in the format: **+CIND: ((<descr>, (list of supported <ind>s))[,(<descr>, (list of supported <ind>s))[,…]])** where: **<descr>** - indicator names as follows (along with their **<ind>** ranges) "battchg" - battery charge level **<ind>** - battery charge level indicator range 0..5 99 - not measurable "signal" - signal quality **<ind>** - signal quality indicator range 0..7 99 - not measurable "service" - service availability **<ind>** - service availability indicator range 0 - not registered to any network 1 - registered to home network "sounder" - sounder activity **<ind>** - sounder activity indicator range 0 - there's no any sound activity 1 - there's some sound activity "message" - message received **<ind>** - message received indicator range 0 - there is no unread short message at memory location "SM" 1 - unread short message at memory location "SM" "call" - call in progress **<ind>** - call in progress indicator range 0 - there's no calls in progress 1 - at least a call has been established "roam" - roaming **<ind>** - roaming indicator range

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+CIND - Indicator Control	
	0 - registered to home network or not registered 1 - registered to other network "smsfull" - a short message memory storage in the MT has become full (1), or memory locations are available (0) **<ind>** - short message memory storage indicator range 0 - memory locations are available 1 - a short message memory storage in the MT has become full. "rssi" - received signal (field) strength **<ind>** - received signal strength level indicator range 0 - signal strength ≤ 112 dBm 1..4 - signal strength in 15 dBm steps 5 - signal strength ≥ 51 dBm 99 - not measurable
Example	*Next command causes all the indicators to be registered* AT+CIND=1,1,1,1,1,1,1,1,1 *Next command causes all the indicators to be de-registered* AT+CIND=0,0,0,0,0,0,0,0,0 *Next command to query the current value of all indicators* AT+CIND? CIND: 4,0,1,0,0,0,0,0,2 OK
Note	See command **+CMER**
Reference	3GPP TS 27.007

3.5.4.4.6 Mobile Equipment Event Reporting - +CMER

+CMER - Mobile Equipment Event Reporting	
AT+CMER= **[<mode>** **[,<keyp>** **[,<disp>** **[,<ind>** **[,<bfr>]]]]]**	Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (n.b.: sending of URCs in the case of key pressings or display changes are currently not implemented). Parameters: **<mode>** - controls the processing of unsolicited result codes 0 - discard **+CIEV** Unsolicited Result Codes. 1 - discard **+CIEV** Unsolicited Result Codes when TA-TE link is reserved (e.g. on-line data mode); otherwise forward them directly to the TE. 2 - buffer **+CIEV** Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE. 3 - forward **+CIEV** Unsolicited Result Codes directly to the TE; when TA is in on-line data mode each **+CIEV** URC is replaced with a **Break** (100 ms), and is stored in a buffer; onche the ME goes into command mode (after **+++** was entered), all URCs stored in the buffer will be output.

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+CMER - Mobile Equipment Event Reporting	
	<keyp> - keypad event reporting 0 - no keypad event reporting **<disp>** - display event reporting 0 - no display event reporting **<ind>** - indicator event reporting 0 - no indicator event reporting 2 - indicator event reporting **<bfr>** - TA buffer clearing 0 - TA buffer of unsolicited result codes is cleared when <mode> 1..3 is entered
AT+CMER?	Read command returns the current setting of parameters, in the format: **+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>**
AT+CMER=?	Test command returns the range of supported values for parameters **<mode>, <keyp>, <disp>, <ind>, <bfr>**, in the format: **+CMER: (list of supported <mode>s),(list of supported <keyp>s), (list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)**
Reference	3GPP TS 27.007

3.5.4.4.7 Select Phonebook Memory Storage - +CPBS

+CPBS - Select Phonebook Memory Storage	
AT+CPBS= <storage>	Set command selects phonebook memory storage **<storage>**, which will be used by other phonebook commands. Parameter: **<storage>** "SM" - SIM phonebook "FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM) "LD" - SIM last-dialling-phonebook (+CPBF is not applicable for this storage) "MC" - device missed (unanswered received) calls list (+CPBF is not applicable for this storage) "RC" - ME received calls list (+CPBF is not applicable for this storage). “DC” - MT dialled calls list “ME” – MT phonebook “EN” - SIM/USIM (or MT) emergency number (+CPBW is not be applicable for this storage) “ON” - SIM (or MT) own numbers (MSI torage may be available through +CNUM also). “MB” - mailbox numbers stored on SIM; it is possible to select this storage only if the mailbox service is provided by the SIM (see **#MBN**).
AT+CPBS?	Read command returns the actual values of the parameter **<storage>**, the number of occupied records **<used>** and the maximum index number **<total>**, in the format:

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+CPBS - Select Phonebook Memory Storage	
	+CPBS: <storage>,**<used>**,**<total>**
AT+CPBS=?	Test command returns the supported range of values for the parameters **<storage>**.
Example	AT+CPBS=”SM” *current phonebook storage is SIM* AT+CPBR=1 +CPBR: 1,"0105872928",129,"James" OK
Reference	3GPP TS 27.007

3.5.4.4.8 Read Phonebook Entries - +CPBR

+CPBR - Read Phonebook Entries	
AT+CPBR= <index1> [,<index2>]	Execution command returns phonebook entries in location number range **<index1>**..**<index2>** from the current phonebook memory storage selected with **+CPBS**. If **<index2>** is omitted, only location **<index1>** is returned. Parameters: **<index1>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). **<index2>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). The response format is: **[+CPBR: <index1>**,**<number>**,**<type>**,**<text>[<CR><LF>** **+CPBR: <index2>**,**<number>**,**<type>**,**<text>[...]]]** where: **<index*n*>** - the location number of the phonebook entry **<number>** - string type phone number of format **<type>** **<type>** - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") **<text>** - the alphanumeric text associated to the number; used character set should be the one selected with command **+CSCS.** Note: if “MC” is the currently selected phonebook memory storage, a sequence of missed calls coming from the same number will be saved as one missed call and **+CPBR** will show just one line of information. Note: If all queried locations are empty (but available), no information text lines will be returned, while if listing fails in an **ME** error, **+CME ERROR: <err>** is returned.
AT+CPBR=?	Test command returns the supported range of values for parameters

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+CPBR - Read Phonebook Entries	
	<index*n*> and the maximum lengths of **<number>** and **<text>** fields, in the format: **+CPBR: (<minIndex>** - **<maxIndex>**),**<nlength>**,**<tlength>** where: **<minIndex>** - the minimum **<index>** number, integer type **<maxIndex>**- the maximum **<index>** number, integer type **<nlength>** - maximum **<number>** field length, integer type **<tlength>** - maximum **<name>** field length, integer type
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.
Example	AT+CPBS=”ME” OK AT+CPBS? +CPBS: "ME",1,100 OK AT+CPBR=? +CPBR: (1-100),40,255 OK AT+CPBR=1 +CPBR: 1,”01048771234”,129,”James” OK
Reference	3GPP TS 27.007

3.5.4.4.9 Find Phonebook Entries - +CPBF

+CPBF - Find Phonebook Entries	
AT+CPBF= <findtext>	Execution command returns phonebook entries (from the current phonebook memory storage selected with **+CPBS**) which alphanumeric field start with string **<findtext>**. Parameter: **<findtext>** - string type; used character set should be the one selected with command **+CSCS.** The command returns a report in the form: **[+CPBF: <index1>,<number>,<type>,<text>[<CR><LF>** **+CPBF: <index2>,<number>,<type>,<text>[…]]]** where: **<index*n*>** - the location number of the phonebook entry

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+CPBF - Find Phonebook Entries	
	<number> - string type phone number of format **<type>** **<type>** - type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") **<text>** - the alphanumeric text associated to the number; used character set should be the one selected with command **+CSCS.** Note: **+CPBF** is not applicable if the current selected storage (see **+CPBS**) is either “MC”, either “RC” or “LD” or “DC”. Note: if **<findtext>=””** the command returns all the phonebook records. Note: if no PB records satisfy the search criteria then an **ERROR** message is reported.
AT+CPBF=?	Test command reports the maximum lengths of **<number>** and **<text>** fields, in the format: **+CPBF: [<nlength>],[<tlength>]** where: **<nlength>** - maximum length of field **<number>**, integer type **<tlength>** - maximum length of field **<text>**, integer type
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.
Example	AT+CPBS="ME" *Selecting phonebook* OK AT+CPBF="J" *Searching for string “J”* +CPBF: 1,"01048771234",129,"James" +CPBF: 2,"0169998888",129,"Jane" OK *Searching for everything in phone book, and finding all entries* AT+CPBF="" +CPBF: 1,"01048771234",129,"James" +CPBF: 2,"0169998888",129,"Jane" +CPBF: 7,"0115556666",129,"Juliet" +CPBF: 5,"0181111234",129,"Kevin" OK
Reference	3GPP TS 27.007

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3.5.4.4.10 Write Phonebook Entry - +CPBW

+CPBW - Write Phonebook Entry	
AT+CPBW= **[<index>]** **[,<number>** **[,<type>** **[,<text>]]]**	Execution command writes phonebook entry in location number **<index>** in the current phonebook memory storage selected with **+CPBS**. Parameters: **<index>** - integer type, value in the range of location numbers of the currently selected phonebook memory storage (see **+CPBS**). **<number>** - string type, phone number in the format **<type>** **<type>** - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") **<text>** - the text associated to the number, string type; used character set should be the one selected with command **+CSCS**. Note: If record number **<index>** already exists, it will be overwritten. Note: if either **<number>**, **<type>** and **<text>** are omitted, the phonebook entry in location **<index>** is deleted. Note: if **<index>** is omitted or **<index>**=0, the number **<number>** is stored in the first free phonebook location. Note: if either “LD”, “MC” or “RC” memory storage has been selected (see **+CPBS**) it is possible just to delete the phonebook entry in location **<index>**, therefore parameters **<number>**, **<type>** and **<text>** must be omitted.
AT+CPBW=?	Test command returns location range supported by the current storage as a compound value, the maximum length of **<number>** field, supported number format of the storage and maximum length of **<text>** field. The format is: **+CPBW: (list of supported <index>s),<nlength>,** **(list of supported <type>s),<tlength>** where: **<nlength>** - integer type value indicating the maximum length of field **<number>**. **<tlength>** - integer type value indicating the maximum length of field **<text>**
Reference	3GPP TS 27.007
Example	AT+CPBW=? +CPBW: (1-100),40,(128-255),255 OK AT+CPBW=6,"18651896699",129,"John"

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+CPBW - Write Phonebook Entry	
	OK
Note	Remember to select the PB storage with **+CPBS** command before issuing PB commands.

3.5.4.4.11 Clock Management - +CCLK

+CCLK - Clock Management	
AT+CCLK=<time>	Set command sets the real-time clock of the **ME**. Parameter: **<time>** - current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz" yy - year (two last digits are mandatory), range is 00..99 MM - month (two last digits are mandatory), range is 01..12 dd - day (two last digits are mandatory), range is 01..31 (if the month MM has less than 31 days, the clock will be set for the next month) hh - hour (two last digits are mandatory), range is 00..23 mm - minute (two last digits are mandatory), range is 00..59 ss - seconds (two last digits are mandatory), range is 00..59 ±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two last digits are mandatory), range is -47..+48
AT+CCLK?	Read command returns the current setting of the real-time clock, in the format **<time>**. Note: the three last characters of **<time>** are not returned by **+CCLK?** because the **ME** doesn't support time zone information.
AT+CCLK=?	Test command returns the **OK** result code.

Example	`AT+CCLK="02/09/07,22:30:00+00"`
	`OK`
	`AT+CCLK?`
	`+CCLK: 02/09/07,22:30:25`
	
	`OK`

Reference	3GPP TS 27.007

3.5.4.4.12 Alarm Management - +CALA

+CALA - Alarm Management	
AT+CALA=<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]	Set command stores in the internal Real Time Clock an alarm time with respective settings. It is possible to set up a recurrent alarm for one or more days in the week. Currently just one alarm can be set.

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+CALA - Alarm Management	
	When the RTC time reaches the alarm time then the alarm starts, the behaviour of the MODULE depends upon the setting **<type>** and if the device was already ON at the moment when the alarm time had come. Parameters: **<time>** - current alarm time as quoted string in the same format as defined for **+CCLK** command (i.e. "yy/MM/dd,hh:mm:ss±zz"), unless the **<recurr>** parameter is used: in this case **<time>** must not contain a date (i.e. "hh:mm:ss±zz") **<n>** - index of the alarm 0 - The only value supported is 0. **<type>** - alarm behaviour type 0 - reserved for other equipment use. 1 - the MODULE simply wakes up fully operative as if the ON/OFF button had been pressed. If the device is already ON at the alarm time, then it does nothing. (Default) 2 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE issues an unsolicited code every 3s: **+CALA: <text>** where **<text>** is the **+CALA** optional parameter previously set. The device keeps on sending the unsolicited code every 3s until a **#WAKE** or **#SHDN** command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. (default) 3 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE starts playing the alarm tone on the selected path for the ringer (see command **#SRP**) The device keeps on playing the alarm tone until a **#WAKE** or **#SHDN** command is received or a 90 s time-out occurs. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. 4 - the MODULE wakes up in "alarm mode" if at the alarm time it was off, otherwise it remains fully operative. In both cases the MODULE brings the pin GPIO6 high, provided its **<direction>** has been set to alarm output, and keeps it in this state until a **#WAKE** or **#SHDN** command is received or a 90 seconds timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s then it shuts down. 5 - the MODULE will make both the actions as for type=2 and **<type>=3**. 6 - the MODULE will make both the actions as for type=2 and **<type>=4**. 7 - the MODULE will make both the actions as for type=3 and **<type>=4**. 8 - the MODULE wakes up in "alarm mode" if at the alarm time it was off,

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+CALA - Alarm Management	
	otherwise it remains fully operative. In both cases the MODULE sets **High** the **RI** output pin. The **RI** output pin remains **High** until next **#WAKE** issue or until a 90s timer expires. If the device is in "alarm mode" and it does not receive the **#WAKE** command within 90s. After that it shuts down. **<text>** - unsolicited alarm code text string. It has meaning only if **<type>** is equal to 2 or 5 or 6. **<recurr>** - string type value indicating day of week for the alarm in one of the following formats: "<1..7>[,<1..7>[, …]]" - it sets a recurrent alarm for one or more days in the week; the digits 1 to 7 corresponds to the days in the week (Monday is 1). "0" - it sets a recurrent alarm for all days in the week. **<silent>** - integer type indicating if the alarm is silent or not. 0 - the alarm will not be silent; 1 - the alarm will be silent. Note: a special form of the Set command, +CALA="", deletes an alarm in the ME Note: The "alarm mode" is indicated by hardware pin **CTS** to the **ON** status and **DSR** to the **OFF** status, while the "power saving" status is indicated by a **CTS** - **OFF** ,**DSR** - **OFF** and **USB_VBUS** – **OFF** status. The normal operating status is indicated by **DSR** – **ON or USB_VBUS – ON status**. During the "alarm mode" the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SMS, the only commands that can be issued to the MODULE in this state are the #WAKE and #SHDN, every other command must not be issued during this state.
AT+CALA?	Read command returns the list of current active alarm settings in the ME, in the format: **[+CALA: <time>,<n>,<type>,[<text>],<recurr>,<silent>]**
AT+CALA=?	Test command returns the list of supported index values (currently just 0), alarm types, maximum length of the text to be displayed, maximum length of **<recurr>** and supported **<silent>**s, in the format: **+CALA: (list of supported <n>s),(list of supported <type>s),<tlength>, <rlength>,(list of supported <silent>s)**
Example	AT+CALA="02/09/07,23:30:00+00" OK
Reference	3gpp TS 27.007

3.5.4.4.13 Restricted SIM Access - +CRSM

+CRSM - Restricted SIM Access	
AT+CRSM=	Execution command transmits to the **ME** the SIM **<command>** and its

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+CRSM - Restricted SIM Access	
<command> **[,<fileid>** **[,<P1>,<P2>,<P3>** **[,<data>]]]**	required parameters. **ME** handles internally all **SIM-ME** interface locking and file selection routines. As response to the command, **ME** sends the actual SIM information parameters and response data. Parameters: **<command>** - command passed on by the **ME** to the SIM 176 - READ BINARY 178 - READ RECORD 192 - GET RESPONSE 214 - UPDATE BINARY 220 - UPDATE RECORD 242 - STATUS **<fileid>** - identifier of an elementary data file on SIM. Mandatory for every command except STATUS. **<P1>**,**<P2>**,**<P3>** - parameter passed on by the **ME** to the SIM; they are mandatory for every command except GET RESPONSE and STATUS 0..255 **<data>** - information to be read/written to the SIM (hexadecimal character format). The response of the command is in the format: **+CRSM: <sw1>,<sw2>[,<response>]** where: **<sw1>**,**<sw2>** - information from the SIM about the execution of the actual command either on successful or on failed execution. **<response>** - on a successful completion of the command previously issued it gives the requested data (hexadecimal character format). It's not returned after a successful UPDATE BINARY or UPDATE RECORD command. Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files. Note: use only decimal numbers for parameters **<command>**, **<fileid>**, **<P1>**, **<P2>** and **<P3>**.
AT+CRSM=?	Test command returns the **OK** result code
Example	*Read binary, ICCID(2FE2)* *AT+CRSM=176,12258,0,0,10* *+CRSM: 144,0,98285070200110768 6F4*

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+CRSM - Restricted SIM Access	
	OK *Read record, ADN(6F3A)* *AT+CRSM=178,28474,1,4,40* *+CRSM: 144,0,42434A554EFFFFFFFFFFFFFFFFFFFFFF0681105678 9282FFFFFFFFFFFFF* *OK* *Update Binary, KcGPRS(6F52)* *AT+CRSM=214,28539,0,0,8,C69018C7958C87* *+CRSM: 144,0* *OK* *Update Record, ADN(6F3A)* *AT+CRSM=220,28474,9,4,30,657469FFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFF* *+CRSM: 144,0* *OK* *Status, FPLMN(6F7B)* *AT+CRSM=242,28539* *+CRSM: 144,0,623C820238218410A0000000871002FFFFFFFF8904 0300FFA5118001318103010A3282011E8304000030E08A01058B032F 0609C6099001C0830101830181*
Reference	3GPP TS 27.007, 3GPP TS 11.11/51.011

3.5.4.4.14 Alert Sound Mode - +CALM

+CALM - Alert Sound Mode	
AT+CALM= <mode>	Set command is used to select the general alert sound mode of the device. Parameter: **<mode>** 0 - normal mode 1 - silent mode; no sound will be generated by the device, except for alarm sound 2 - stealth mode; no sound will be generated by the device Note: if silent mode is selected then incoming calls will not produce alerting sounds but only the unsolicited messages **RING** or **+CRING**.
AT+CALM?	Read command returns the current value of parameter **<mode>**.
AT+CALM=?	Test command returns the supported values for the parameter **<mode>** as

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+CALM - Alert Sound Mode	
	compound value. **+CALM: (0-2)**
Reference	3GPP TS 27.007

3.5.4.4.15 Ringer Sound Level - +CRSL

+CRSL - Ringer Sound Level	
AT+CRSL=<level>	Set command is used to select the incoming call ringer sound level of the device. Parameter: **<level>** - ringer sound level 0 - Off 1 - low 2 - middle 3 - high 4 - progressive
AT+CRSL?	Read command reports the current **<level>** setting of the call ringer in the format: **+CRSL: <level>**
AT+CRSL=?	Test command reports **<level>** supported values as compound value. **+CRSL: (0-4)**
Reference	3GPP TS 27.007

3.5.4.4.16 Loudspeaker Volume Level - +CLVL

+CLVL - Loudspeaker Volume Level	
AT+CLVL=<level>	Set command is used to select the volume of the internal loudspeaker audio output of the device. Parameter: **<level>** - loudspeaker volume 0..*max* - the value of *max* can be read by issuing the Test command **AT+CLVL=?**
AT+CLVL?	Read command reports the current **<level>** setting of the loudspeaker volume in the format: **+CLVL: <level>**
AT+CLVL=?	Test command reports **<level>** supported values range in the format: **+CLVL: (0-*max*)**
Reference	3GPP TS 27.007

3.5.4.4.17 Microphone Mute Control - +CMUT

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+CMUT - Microphone Mute Control	
AT+CMUT=<n>	Set command enables/disables the muting of the microphone audio line during a voice call. Parameter: **<n>** 0 - mute off, microphone active (factory default) 1 - mute on, microphone muted. Note: this command mutes/activates both microphone audio paths, internal mic and external mic.
AT+CMUT?	Read command reports whether the muting of the microphone audio line during a voice call is enabled or not, in the format: **+CMUT: <n>**
AT+CMUT=?	Test command reports the supported values for **<n>** parameter.
Reference	3GPP TS 27.007

3.5.4.4.18 Accumulated Call Meter - +CACM

+CACM - Accumulated Call Meter	
AT+CACM= **[<pwd>]**	Set command resets the Advice of Charge related Accumulated Call Meter stored in SIM (ACM): it contains the total number of home units for both the current and preceding calls. Parameter: **<pwd>** - to access this command PIN2; if PIN2 has been already input once after startup, it is required no more
AT+CACM?	Read command reports the current value of the SIM ACM in the format: **+CACM: <acm>** where: **<acm>** - accumulated call meter in home units, string type: three bytes of the ACM value in hexadecimal format (e.g. “00001E” indicates decimal value 30) Note: the value **<acm>** is in home units; price per unit and currency are defined with command **+CPUC**
AT+CACM=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.4.19 Accumulated Call Meter Maximum - +CAMM

+CAMM - Accumulated Call Meter Maximum	
AT+CAMM= **[<acmmax>**	Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the

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+CAMM - Accumulated Call Meter Maximum	
[,<pwd>]]	maximum number of home units allowed to be consumed by the subscriber. When ACM reaches **<acmmax>** value further calls are prohibited. Parameter: **<acmmax>** - ACMmax value, integer type: it is the maximum number of home units allowed to be consumed by the subscriber. **<pwd>** - PIN2; if PIN2 has been already input once after startup, it is required no more Note: **<acmmax>** = 0 value disables the feature.
AT+CAMM?	Read command reports the ACMmax value stored in SIM in the format: **+CAMM : <acmm>** where: **<acmm>** - ACMmax value in home units, string type: three bytes of the ACMmax value in hexadecimal format (e.g. “00001E” indicates decimal value 30)
AT+CAMM=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.4.20 Price per Unit and Currency Table - +CPUC

+CPUC - Price Per Unit And Currency Table	
AT+CPUC= <currency>, <ppu>[,<pwd>]	Set command sets the values of Advice of Charge related Price per Unit and Currency Table stored in SIM (PUCT). The PUCT information can be used to convert the home units (as used in commands **+CAOC**, **+CACM** and **+CAMM**) into currency units. Parameters: **<currency>** - string type; three-character currency code (e.g. “LIT”, “L. “, “USD”, “DEM” etc..); used character set should be the one selected with command **+CSCS**. **<ppu>** - price per unit, string type (dot is used as decimal separator) e.g. “1989.27” **<pwd>** - SIM PIN2; if PIN2 has been already input once after startup, it is required no more
AT+CPUC?	Read command reports the current values of **<currency>** and **<ppu>** parameters in the format: **+CACM : <currency>**,**<ppu>**
AT+CPUC=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

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3.5.4.4.21 Available AT Commands - +CLAC

+CLAC - Available AT Commands	
AT+CLAC	Execution command causes the ME to return the AT commands that are available for the user, in the following format: **<AT cmd1>[<CR><LF><AT cmd2>[…]]** where: **<AT cmd*n*>** - defines the AT command including the prefix **AT**
AT+CLAC=?	Test command returns the **OK** result code
Reference	3GPP TS 27.007

3.5.4.4.22 Delete Alarm - +CALD

+CALD - Delete Alarm	
AT+CALD=<n>	Execution command deletes an alarm in the ME Parameter: **<n>** - alarm index 0
AT+CALD=?	Test command reports the range of supported values for **<n>** parameter.
Reference	3G TS 27.007

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3.5.4.5 Mobile Equipment Errors

3.5.4.5.1 Report Mobile Equipment Error - +CMEE

+CMEE - Report Mobile Equipment Error	
AT+CMEE=[<n>]	Set command enables/disables the report of result code: **+CME ERROR: <err>** as an indication of an error relating to the +**Cxxx** commands issued. When enabled, device related errors cause the **+CME ERROR: <err>** final result code instead of the default **ERROR** final result code. **ERROR** is anyway returned normally when the error message is related to syntax, invalid parameters, or **DTE** functionality. Parameter: **<n>** - enable flag 0 - disable **+CME ERROR:<err>** reports, use only **ERROR** report. 1 - enable **+CME ERROR:<err>** reports, with **<err>** in numeric format 2 - enable **+CME ERROR: <err>** reports, with **<err>** in verbose format
AT+CMEE?	Read command returns the current value of subparameter **<n>**: **+CMEE: <n>**
AT+CMEE=?	Test command returns the range of values for subparameter **<n>**
Note	**+CMEE** has no effect on the final result code **+CMS**
Reference	3GPP TS 27.007

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3.5.4.6 Voice Control

3.5.4.6.1 DTMF Tones Transmission - +VTS

+VTS - DTMF Tones Transmission	
AT+VTS= <dtmfstring> [,duration]	Execution command allows the transmission of DTMF tones. Parameters: **<dtmfstring>** - string of **<dtmf>s,** i.e. ASCII characters in the set **(0-9), #,*,(A-D)**; the string can be at most 255 **<dtmf>s** long; it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through **+VTD** command. **<duration>** - duration of a tone in 1/100 sec.; this parameter can be specified only if the length of first parameter is just one ASCII character 0 - a single DTMF tone will be transmitted for a duration depending on the network, no matter what the current **+VTD** setting is. 1..255 - a single DTMF tone will be transmitted for a time **<duration>** (in 10 ms multiples), no matter what the current **+VTD** setting is. Note: this commands operates in voice mode only (see **+FCLASS**).
AT+VTS=?	Test command provides the list of supported **<dtmf>s** and the list of supported **<duration>s** in the format: **(list of supported <dtmf>s)[,(list of supported <duration>s)]**
Reference	3GPP TS 27.007 and TIA IS-101

3.5.4.6.2 Tone Duration - +VTD

+VTD - Tone Duration	
AT+VTD= <duration>	Set command sets the length of tones transmitted with **+VTS** command. Parameter: **<duration>** - duration of a tone 0 - the duration of every single tone is dependent on the network (factory default) 1..255 - duration of every single tone in 1/10 sec.
AT+VTD?	Read command reports the current Tone Duration, in the format: **<duration>**
AT+VTD=?	Test command provides the list of supported **<duration>s** in the format: **(list of supported <duration>s)**
Reference	3GPP TS 27.007 and TIA IS-101

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3.5.4.7 Commands For GPRS

3.5.4.7.1 GPRS Mobile Station Class - +CGCLASS

+CGCLASS - GPRS mobile station class	
AT+CGCLASS= [<class>]	Set command sets the GPRS class according to **<class>** parameter. Parameter: **<class>** - GPRS class "A" - WCDMA (factory default) "B" - GSM/GPRS "CG" - class C in GPRS only mode (GPRS only) "CC" - class C in circuit switched only mode (GSM only) Note: the setting is saved in NVM (and available on following reboot).
AT+CGCLASS?	Read command returns the current value of the GPRS class in the format: **+CGLASS: <class>**
AT+CGCLASS=?	Test command reports the range for the parameter **<class>**

3.5.4.7.2 GPRS Attach Or Detach - +CGATT

+CGATT - GPRS Attach Or Detach	
AT+CGATT=[<state>]	Execution command is used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter **<state>**. Parameter: **<state>** - state of GPRS attachment 0 - detached 1 - attached
AT+CGATT?	Read command returns the current GPRS service state.
AT+CGATT=?	Test command requests information on the supported GPRS service states.
Example	AT+CGATT? +CGATT: 0 OK AT+CGATT=? +CGATT: (0,1) OK AT+CGATT=1 OK
Reference	3GPP TS 27.007

3.5.4.7.3 GPRS Network Registration Status - +CGREG

+CGREG - GPRS Network Registration Status	
AT+CGREG=[<n>]	Set command controls the presentation of an unsolicited result code **+CGREG: (see format below)**. Parameter: **<n>** - result code presentation mode 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status, it is issued the unsolicited result code: **+CGREG: <stat>** where: **<stat>** - registration status 0 - not registered, terminal is not currently searching a new operator to register to 1 - registered, home network 2 - not registered, but terminal is currently searching a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming 2 - enable network registration and location information unsolicited result code; if there is a change of the network cell, it is issued the unsolicited result code: **+CGREG: <stat>[,<lac>,<ci>]** where: **<stat>** - registration status (see above for values) **<lac>** - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** - cell ID in hexadecimal format.
AT+CGREG?	Read command returns the status of result code presentation mode **<n>** and the integer **<stat>** which shows whether the network has currently indicated the registration of the terminal in the format: **+CGREG: <n>,<stat>**
AT+CGREG=?	Test command returns supported values for parameter **<n>**
Reference	3GPP TS 27.007

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3.5.4.7.4 Define PDP Context - +CGDCONT

+CGDCONT - Define PDP Context	
AT+CGDCONT= **[<cid>** **[,<PDP_type>** **[,<APN>** **[,<PDP_addr>** **[,<d_comp>** **[,<h_comp>** **[,<pd1>** **[,…[,pdN]]]]]]]]**	Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, **<cid>** Parameters: **<cid>** - (PDP Context Identifier) numeric parameter which specifies a particular PDP context definition. 1..*max* - where the value of *max* is returned by the Test command **<PDP_type>** - (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol "IP" - Internet Protocol "PPP" - Point to Point Protocol “IPV6” - Internet Protocol, Version 6 **<APN>** - (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested. **<PDP_addr>** - a string parameter that identifies the terminal in the address space applicable to the PDP. The allocated address may be read using the **+CGPADDR** command. **<d_comp>** - numeric parameter that controls PDP data compression 0 - off (default if value is omitted) 1 – on 2 - V.42bis **<h_comp>** - numeric parameter that controls PDP header compression 0 - off (default if value is omitted) 1 – on 2 - RFC1144 (applicable for SNDCP only) 3- RFC2507 4- RFC3095 (applicable for PDCP only) **<pd1>**, …, **<pdN>** - zero to N string parameters whose meanings are specific to the **<PDP_type>** Note: a special form of the Set command, **+CGDCONT=<cid>**, causes the values for context number **<cid>** to become undefined.
AT+CGDCONT?	Read command returns the current settings for each defined context in the format: **+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>, <h_comp>[,<pd1>[,…[,pdN]]][<CR><LF>+CGDCONT: <cid>, <PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp> [,<pd1>[,…[,pdN]]][…]]**
AT+CGDCONT=?	Test command returns values supported as a compound value

Example	`AT+CGDCONT=1,"IP","APN","10.10.10.10",0,0`
	`OK`
	`AT+CGDCONT?`
	`+CGDCONT: 1,"IP","APN","10.10.10.10",0,0`

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+CGDCONT - Define PDP Context	
	OK AT+CGDCONT=? +CGDCONT: (1-16),"IP",,,(0-2),(0-4) +CGDCONT: (1-16),"PPP",,,(0-2),(0-4) +CGDCONT: (1-16),"IPV6",,,(0-2),(0-4) OK
Reference	3GPP TS 27.007

3.5.4.7.5 Quality Of Service Profile (Minimum Acceptable) - +CGQMIN

+CGQMIN - Quality Of Service Profile (Minimum Acceptable)	
AT+CGQMIN= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]	Set command allows to specify a minimum acceptable profile which is checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command). **<precedence>** - precedence class **<delay>** - delay class **<reliability>** - reliability class **<peak>** - peak throughput class **<mean>** - mean throughput class If a value is omitted for a particular class then this class is not checked. Note: a special form of the Set command, **+CGQMIN=<cid>** causes the requested profile for context number **<cid>** to become undefined.
AT+CGQMIN?	Read command returns the current settings for each defined context in the format: **+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean>[<CR><LF>+CGQMIN: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean>[…]]** If no PDP context has been defined, it has no effect and **OK** result code is returned.
AT+CGQMIN=?	Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: **+CGQMIN: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s), (list of supported <peak>s),(list of supported <mean>s)**

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+CGQMIN - Quality Of Service Profile (Minimum Acceptable)	
	Note: only the “IP” PDP_Type is currently supported.
Example	AT+CGQMIN=1,0,0,3,0,0 OK AT+CGQMIN? +CGQMIN: 1,0,0,5,0,0 OK AT+CGQMIN=? +CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQMIN: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQMIN: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060

3.5.4.7.6 3G Quality Of Service Profile (Minimum Acceptable) - +CGEQMIN

+CGEQMIN – 3G Quality Of Service Profile (Minimum Acceptable)	
AT+CGEQMIN= [<cid> [,<Traffic class> [,<Maximum bitrate UL> [,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> [,<SDU error ratio> [,<Residual bit error ratio> [,<Delivery of erroneous SDUs> [,<Transfer delay> [,<Traffic handling priority>]]]]]]]]]]]]	Set command allows to specify a 3G quality of service profile for the context identified by the(local) context identification parameter <cid> which is checked by the MT against the negotiated profile returned in the Activate/Modify PDP Context Accept Message. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command). **<Traffic class>** - Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribed value **<Maximum bitrate UL>** - Maximum bitrate Up Link (kbits/s) 0 - subscribed value 1…512 **<Maximum bitrate DL>** - Maximum bitrate down link (kbits/s) 0 - subscribed value 1…16000 **<Guaranteed bitrate UL>** - the guaranteed bitrate up link(kbits/s) 0 - subscribed value 1…512 **<Guaranteed bitrate DL>** - the guaranteed bitrate down link(kbits/s) 0 - subscribed value

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+CGEQMIN – 3G Quality Of Service Profile (Minimum Acceptable)	
	1…16000 **<Delivery order>** SDU Delivery oreder 0 - no 1 - yes 2 - subscribed value **<Maximum SDU size>** Maximum SDU size in octets 0 - subscribed value 1…1520 **<SDU error ratio>** SDU error ratio - mEe mean m*10^{-e} , for example 1E2 mean 1*10^{-2} “0E0” “1E1” “1E2” “7E3” “1E3” “1E4” “1E5” “1E6” **<Residual bit error ratio>** Residual bitt error ratio - mEe mean m*10^{-e} , for example 1E2 mean 1*10^{-2} “0E0” “5E2” “1E2” “5E3” “4E3” “1E3” “1E4” “1E5” “1E6” “6E8” **<Delivery of erroneous SDUs>** Delivery of erroneous SDUs 0 - no 1 – yes 2 – no detect 3 – subscribed value **<Transfer delay >** Transfer delay (milliseconds) 0 – subscribed value 100…4000 **<Traffic handling priority >** Traffic handling priority 0- subscribed value

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+CGEQMIN – 3G Quality Of Service Profile (Minimum Acceptable)	
	1…3 Note: a special form of the Set command, **+CGEQMIN=<cid>** causes the requested profile for context number **<cid>** to become undefined.
AT+CGEQMIN?	Read command returns the current settings for each defined context in the format: **[+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling><CR><LF>]** **[+CGEQMIN:…]** If no PDP context has been defined, it has no effect and **OK** result code is returned.
AT+CGEQMIN=?	Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: **+CGQMIN: <PDP_Type>,(list of supported <Traffic class>s),** **(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported<Maximum SDU size>s),(list of supported<SDU error ratio>s),(list of supported<Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s**
Example	AT+CGEQMIN=1,0,384,384,128,128,0,0,”0E0”,”0E0”,0,0,0 OK AT+CGEQMIN? +CGEQMIN: 1,0,384,384,128,128,0,0,”0E0”,”0E0”,0,0,0 OK AT+CGEQMIN=? +CGEQMIN: "IP",(0-4),(0-512),(0-16000),(0-512),(0-16000),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) +CGEQMIN: "PPP",(0-4),(0-512),(0-16000),(0-512),(0-16000),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3)

+CGEQMIN – 3G Quality Of Service Profile (Minimum Acceptable)	
	+CGEQMIN: "IPV6",(0-4),(0-512),(0-16000),(0-512),(0-16000),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) OK
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008

3.5.4.7.7 Quality Of Service Profile (Requested) - +CGQREQ

+CGQREQ - Quality Of Service Profile (Requested)	
AT+CGQREQ= [<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]	Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network. It specifies a profile for the context identified by the (local) context identification parameter, **<cid>**. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command). **<precedence>** - precedence class **<delay>** - delay class **<reliability>** - reliability class **<peak>** - peak throughput class **<mean>** - mean throughput class If a value is omitted for a particular class then this class is not checked. Note: a special form of the Set command, **+CGQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined.
AT+CGQREQ?	Read command returns the current settings for each defined context in the format: **+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>, <mean>[<CR><LF>+CGQREQ: <cid>,<precedence>, <delay>,<reliability>,<peak>,<mean>[…]]** If no PDP context has been defined, it has no effect and **OK** result code is returned.
AT+CGQREQ=?	Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: **+CGQREQ: <PDP_Type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s), (list of supported <peak>s),(list of supported <mean>s)** Note: only the “IP” PDP_Type is currently supported.
Example	AT+CGQREQ?

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+CGQREQ - Quality Of Service Profile (Requested)	
	+CGQREQ: 1,0,0,3,0,0 OK AT+CGQREQ=1,0,0,3,0,0 OK AT+CGQREQ=? +CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQREQ: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31) +CGQREQ: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31) OK
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060

3.5.4.7.8 3G Quality Of Service Profile (Requested) - +CGEQREQ

+CGEQREQ – 3G Quality Of Service Profile (Requested)	
AT+CGEQREQ= [<cid> [,<Traffic class> [,<Maximum bitrate UL> [,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> [,<SDU error ratio> [,<Residual bit error ratio> [,<Delivery of erroneous SDUs> [,<Transfer delay> [,<Traffic handling priority>]]]]]]]]]]]]]	Set command allows to specify a 3G quality of service profile for the context identified by the(local) context identification parameter <cid> which is used when the MT sends an Activate PDP Context Request message to the network. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command). **<Traffic class>** - Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribed value **<Maximum bitrate UL>** - Maximum bitrate Up Link (kbits/s) 0 - subscribed value 1…512 **<Maximum bitrate DL>** - Maximum bitrate down link (kbits/s) 0 - subscribed value 1…16000 **<Guaranteed bitrate UL>** - the guaranteed bitrate up link(kbits/s) 0 - subscribed value 1…512 **<Guaranteed bitrate DL>** - the guaranteed bitrate down link(kbits/s) 0 - subscribed value 1…16000

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+CGEQREQ – 3G Quality Of Service Profile (Requested)	
	<Delivery order> SDU Delivery oreder 0 - no 1 - yes 2 - subscribed value **<Maximum SDU size>** Maximum SDU size in octets 0 - subscribed value 1…1520 **<SDU error ratio>** SDU error ratio - mEe mean m*10^{-e} , for example 1E2 mean 1*10^{-2} “0E0” “1E1” “1E2” “7E3” “1E3” “1E4” “1E5” “1E6” **<Residual bit error ratio>** Residual bitt error ratio - mEe mean m*10^{-e} , for example 1E2 mean 1*10^{-2} “0E0” “5E2” “1E2” “5E3” “4E3” “1E3” “1E4” “1E5” “1E6” “6E8” **<Delivery of erroneous SDUs>** Delivery of erroneous SDUs 0 - no 1 – yes 2 – no detect 3 – subscribed value **<Transfer delay >** Transfer delay (milliseconds) 0 – subscribed value 100…4000 **<Traffic handling priority >** Traffic handling priority 0- subscribed value 1…3

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+CGEQREQ – 3G Quality Of Service Profile (Requested)	
	Note: a special form of the Set command, **+CGEQREQ=<cid>** causes the requested profile for context number **<cid>** to become undefined.
AT+CGEQREQ?	Read command returns the current settings for each defined context in the format: **[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling><CR><LF>]** **[+CGEQMIN:…]** If no PDP context has been defined, it has no effect and **OK** result code is returned.
AT+CGEQREQ=?	Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format: **+CGQREQ: <PDP_Type>,(list of supported <Traffic class>s),** **(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported<Maximum SDU size>s),(list of supported<SDU error ratio>s),(list of supported<Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s**
Example	AT+CGEQREQ=1,0,384,384,128,128,0,0,"0E0","0E0",0,0,0 OK AT+CGEQREQ? +CGEQREQ: 1,0,384,384,128,128,0,0,"0E0","0E0",0,0,0 OK AT+CGEQREQ=? +CGEQREQ: "IP",(0-4),(0-512),(0-16000),(0-512),(0-16000),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) +CGEQREQ: "PPP",(0-4),(0-512),(0-16000),(0-512),(0-16000),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) +CGEQREQ: "IPV6",(0-4),(0-512),(0-16000),(0-512),(0-

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+CGEQREQ – 3G Quality Of Service Profile (Requested)	
	16000),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) OK
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008

3.5.4.7.9 PDP Context Activate Or Deactivate - +CGACT

+CGACT - PDP Context Activate Or Deactivate	
AT+CGACT=[<state>[,<cid>[,<cid>[,…]]]]	Execution command is used to activate or deactivate the specified PDP context(s) Parameters: **<state>** - indicates the state of PDP context activation 0 - deactivated 1 - activated **<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command) Note: if no **<cid>**s are specified the activation/deactivation form of the command activates/deactivates all defined contexts.
AT+CGACT?	Read command returns the current activation state for all the defined PDP contexts in the format: **+CGACT: <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>[…]]**
AT+CGACT=?	Test command reports information on the supported PDP context activation states parameters in the format: **+CGACT: (0,1)**
Example	AT+CGACT=1,1 OK AT+CGACT? +CGACT: 1,1 OK
Reference	3GPP TS 27.007

3.5.4.7.10 Show PDP Address - +CGPADDR

+CGPADDR - Show PDP Address	
AT+CGPADDR=[<cid>[,<cid>[,…]]]	Execution command returns a list of PDP addresses for the specified context identifiers in the format: **+CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>,**

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+CGPADDR - Show PDP Address	
	<PDP_addr>[…]] Parameters: **<cid>** - a numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). If no **<cid>** is specified, the addresses for all defined contexts are returned. **<PDP_addr>** - a string that identifies the terminal in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the **+CGDCONT** command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by **<cid>**; **<PDP_addr>** is omitted if none is available
AT+CGPADDR=?	Test command returns a list of defined **<cid>**s.
Example	AT#GPRS=1 +IP: xxx.yyy.zzz.www OK AT+CGPADDR=1 +CGPADDR: 1,"xxx.yyy.zzz.www" OK AT+CGPADDR=? +CGPADDR: (1) OK
Reference	3GPP TS 27.007

3.5.4.7.11 3G Quality of Service Profile (Negotiated) - +CGEQNEG

+CGEQNEG – 3G Quality Of Service Profile (Negotiated)	
AT+CGEQNEG= [<cid>[,<cid>[,…]]]	This command allow the TE to retrieve the negotiated 3G quality of service profiles returned in the Activate PDP Context Accept message. Set command returns the negotiated 3G QoS profile for the specified context identifiers, <cid>s. The Qos profile consists of a number of parameters, each of which may have a separate value. Parameters: **<cid>** - PDP context identification (see **+CGDCONT** command).
AT+CGEQNEG=?	Test command returns a list of <cid>s associated with active contexts.
Example	AT+CGEQREQ? +CGEQREQ: 1,4,0,0,0,0,2,0,"0E0","0E0",3,0,0

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+CGEQNEG – 3G Quality Of Service Profile (Negotiated)	
	OK AT+CGACT=1,1 OK T+CGEQNEG=? +CGEQREQ: (1) OK AT+CGEQNEG=1 +CGEQNEG: 1,3,128,384,0,0,2,1500,"1E4","1E5",3,0,1 OK
Reference	3GPP TS 27.007; 3GPP TS 03.60/23.060; 3GPP TS 24.008

3.5.4.7.12 Enter Data State - +CGDATA

+CGDATA - Enter Data State	
AT+CGDATA=[<L2P>,[<cid>[,<cid>[,…]]]]	Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types. Parameters: **<L2P>** - string parameter that indicates the layer 2 protocol to be used "PPP" - PPP Point-to-point protocol **<cid>** - numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). Note: if parameter **<L2P>** is omitted, the layer 2 protocol is unspecified
AT+CGDATA=?	Test command reports information on the supported layer 2 protocols.
Example	AT+CGDATA=? +CGDATA: (”PPP”) OK AT+CGDATA=”PPP”,1 OK
Reference	3GPP TS 27.007

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3.5.4.8 Commands For Battery Charger

3.5.4.8.1 Battery Charge - +CBC

+CBC - Battery Charge	
AT+CBC	Execution command returns the current Battery Charge status in the format: **+CBC: <bcs>,<bcl>** where: **<bcs>** - battery status 0 - **ME** is powered by the battery 1 - **ME** has a battery connected, and charger pin is being powered 2 - **ME** does not have a battery connected 3 - Recognized power fault, calls inhibited **<bcl>** - battery charge level 0 - battery is exhausted, or **ME** does not have a battery connected 25 - battery charge remained is estimated to be 25% 50 - battery charge remained is estimated to be 50% 75 - battery charge remained is estimated to be 75% 100 - battery is fully charged. Note: **<bcs>**=1 indicates that the battery charger supply is inserted and the battery is being recharged if necessary with it. Supply for **ME** operations is taken anyway from **VBATT** pins. Note: without battery/power connected on **VBATT** pins or during a power fault the unit is not working, therefore values **<bcs>=2** and **<bcs>=3** will never appear.
AT+CBC=?	Test command returns parameter values supported as a compound value. **+CBC: (0-3),(0-100)** Note: although **+CBC** is an execution command, 3gpp TS 27.007 requires the Test command to be defined.
Example	AT+CBC +CBC: 0,75 OK
Note	The **ME** does not make differences between being powered by a battery or by a power supply on the **VBATT** pins, so it is not possible to distinguish between these two cases.
Reference	3GPP TS 27.007

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3.5.5 3GPP TS 27.005 AT Commands for SMS and CBS

3.5.5.1 General Configuration

3.5.5.1.1 Select Message Service - +CSMS

+CSMS - Select Message Service	
AT+CSMS= <service>	Set command selects messaging service **<service>**. It returns the types of messages supported by the **ME**: Parameter: **<service>** 0 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0 (factory default) 1 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version. Set command returns the types of messages supported by the **ME**: **+CSMS: <mt>,<mo>,<bm>** where: **<mt>** - mobile terminated messages support 0 - type not supported 1 - type supported **<mo>** - mobile originated messages support 0 - type not supported 1 - type supported **<bm>** - broadcast type messages support 0 - type not supported 1 - type supported
AT+CSMS?	Read command reports current service setting along with supported message types in the format: **+CSMS: <service>,<mt>,<mo>,<bm>** where: **<service>** - messaging service (see above) **<mt>** - mobile terminated messages support (see above) **<mo>** - mobile originated messages support (see above) **<bm>** - broadcast type messages support (see above)
AT+CSMS=?	Test command reports the supported value of the parameter **<service>**.
Example	AT+CSMS=1 +CSMS: 1,1,1 OK AT+CSMS? +CSMS: 1,1,1,1

+CSMS - Select Message Service	
	OK
Reference	3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.41/23.041

3.5.5.1.2 Preferred Message Storage - +CPMS

+CPMS - Preferred Message Storage	
AT+CPMS= <memr> [,<memw> [,<mems>]]	Set command selects memory storages **<memr>**, **<memw>** and **<mems>** to be used for reading, writing, sending and storing SMs. Parameters: **<memr>** - memory from which messages are read and deleted "ME" – SMS memory storage in Flash "SM" – SMS memory storage in SIM (default) "SR" – Status Report message storage (in SIM EF-SMSR file exists, otherwise in the RAM volatile memory) Note: "SR" non volatile memory is cleared when another SIM card is inserted. It is kept, even after a reset, while the same SIM card is inserted. **<memw>** - memory to which writing and sending operations are made "SM" – SMS memory storage in SIM (default) "ME" – SMS memory storage in Flash**<mems>** - memory to which received SMs are preferred to be stored "SM" – SMS memory storage in SIM (default) "ME" – SMS memory storage in Flash The command returns the memory storage status in the format: **+CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals>** where: **<usedr>** - number of SMs stored into **<memr>** **<totalr>** - max number of SMs that **<memr>** can contain **<usedw>** - number of SMs stored into **<memw>** **<totalw>** max number of SMs that **<memw>** can contain **<useds>** - number of SMs stored into **<mems>** **<totals>** - max number of SMS that **<mems>** can contain
AT+CPMS?	Read command reports the message storage status in the format: **+CPMS: <memr>,<usedr>,<totalr>,<memw>,<usedw>,<totalw>, <mems>,<useds>,<totals>** where **<memr>**, **<memw>** and **<mems>** are the selected storage memories for reading, writing and storing respectively.

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+CPMS - Preferred Message Storage	
AT+CPMS=?	Test command reports the supported values for parameters **<memr>**, **<memw>** and **<mems>**
Example	AT+CPMS? +CPMS: "ME",27, 50,"ME",27, 50,"SR",1,20 OK AT+CPMS="SM","ME","SM" +CPMS: 1,20,27, 50,1,20 OK AT+CPMS? +CPMS: "SM",1,20,"ME",27, 50,"SM",1,20 OK *(You have 1 out of 255 SMS SIM positions occupied)*
Reference	3GPP TS 27.005

3.5.5.1.3 Message Format - +CMGF

+CMGF - Message Format	
AT+CMGF=[<mode>]	Set command selects the format of messages used with send, list, read and write commands. Parameter: **<mode>** 0 - PDU mode, as defined in 3GPP TS 3.40/23.040 and 3GPP TS 3.41/23.041 (factory default) 1 - text mode
AT+CMGF?	Read command reports the current value of the parameter **<mode>**.
AT+CMGF=?	Test command reports the supported value of **<mode>** parameter.
Example	AT+CMGF=1 OK
Reference	3GPP TS 27.005

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3.5.5.2 Message Configuration

3.5.5.2.1 Service Center Address - +CSCA

+CSCA -Service Center Address	
AT+CSCA= <number> [,<type>]	Set command sets the Service Center Address to be used for mobile originated SMS transmissions. Parameter: **<number>** - SC phone number in the format defined by **<type>** **<type>** - the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") Note: to use the SM service, is mandatory to set a Service Center Address at which service requests will be directed. Note: in Text mode, this setting is used by send and write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the **<pdu>** parameter equals zero. Note: the current settings are stored through **+CSAS**
AT+CSCA?	Read command reports the current value of the SCA in the format: **+CSCA: <number>,<type>** Note: if SCA is not present the device reports an error message.
AT+CSCA=?	Test command returns the **OK** result code.
Example	AT+CSCA="821029190903",145 OK AT+CSCA? +CSCA: "+821029190903",145 OK
Reference	3GPP TS 27.005

3.5.5.2.2 Select service for MO SMS services - CGSMS

+CGSMS – Select service for MO SMS messages	
AT+CGSMS= [<service>]	The set command is used to specify the service or service preference that the MT will use to send MO SMS messages. Parameters: **<service>** -a numeric parameter which indicates the service or service preference to be used.

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+CGSMS – Select service for MO SMS messages	
	0 – Packet Domain 1 - Circuit switched 2 – Packet Domain preferred (use circuit switched if GRPS is not available) 3 - Circuit switched preferred (use Packet Domain if circuit switched not available) Note: If SMS transfer via Packet Domain fails, <service> parameter are automatically reset to Circuit switched.
AT+CGSMS?	Read command reports the currently selected service or service preference : **+CGSMS: <service>**
AT+CGSMS=?	Test command reports the supported range of values for parameter **<service>**
Reference	3GPP TS 27.007

3.5.5.2.3 Set Text Mode Parameters - +CSMP

+CSMP - Set Text Mode Parameters	
AT+CSMP= **[<fo>** **[,<vp>** **[,<pid>** **[,<dcs>]]]]**	Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used (**AT+CMGF=1**) Parameters: **<fo>** - depending on the command or result code: first octet of 3GPP TS 03.40/23.040 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. **<vp>** - depending on SMS-SUBMIT **<fo>** setting: 3GPP TS 03.40/23.040 TP-Validity-Period either in integer format (default 167) or in quoted time-string format **<pid>** - 3GPP TS 03.40/23.040 TP-Protocol-Identifier in integer format. **<dcs>** - depending on the command or result code: 3GPP TS 03.38/23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme Note: the current settings are stored through **+CSAS**
AT+CSMP?	Read command reports the current setting in the format: **+CSMP: < fo>,<vp>,<pid>,<dcs>**
AT+CSMP=?	Test command returns the **OK** result code.

Example	*Set the parameters for an outgoing message with 24 hours of validity period and default properties:*
	
	`AT+CSMP=17,167,0,0`
	`OK`

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+CSMP - Set Text Mode Parameters	
Reference	3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.38/23.038

3.5.5.2.4 Show Text Mode Parameters - +CSDH

+CSDH - Show Text Mode Parameters	
AT+CSDH=[<show>]	Set command controls whether detailed header information is shown in text mode (**AT+CMGF=1**) result codes. Parameter: **<show>** 0 - do not show header values defined in commands **+CSCA** and **+CSMP** (**<sca>**, **<tosca>**, **<fo>**, **<vp>**, **<pid>** and **<dcs>**) nor **<length>**, **<toda>** or **<tooa>** in **+CMT**, **+CMGL**, **+CMGR** result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in **+CMGR** result code do not show **<pid>**, **<mn>**, **<da>**, **<toda>**, **<length>** or **<cdata>** 1 - show the values in result codes
AT+CSDH?	Read command reports the current setting in the format: **+CSDH: <show>**
AT+CSDH=?	Test command reports the supported range of values for parameter **<show>**
Reference	3GPP TS 27.005

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3.5.5.2.5 Select Cell Broadcast Message Types - +CSCB

+CSCB -Select Cell Broadcast Message Types	
AT+CSCB=[<mode>[,<mids>[,<dcss>]]]	Set command selects which types of Cell Broadcast Messages are to be received by the device. Parameters: **<mode>** 0 - the message types defined by **<mids>** and **<dcss>** are accepted (factory default) 1 - the message types defined by **<mids>** and **<dcss>** are rejected **<mids>** - Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string (“”). **<dcss>** - Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string (“”). Note: the current settings are stored through **+CSAS**
AT+CSCB?	Read command reports the current value of parameters **<mode>**, **<mids>** and **<dcss>**.
AT+CSCB=?	Test command returns the range of values for parameter **<mode>**.
Example	AT+CSCB? +CSCB: 1,"","" OK *(all CBMs are accepted, none is rejected)* AT+CSCB=0,"0,1,300-315,450","0-3" OK
Reference	3GPP TS 27.005, 3GPP TS 03.41/23.041, 3GPP TS 03.38/23.038.

3.5.5.2.6 Save Settings - +CSAS

+CSAS - Save Settings	
AT+CSAS[=<profile>]	Execution command saves settings which have been made by the **+CSCA**, **+CSMP** and **+CSCB** commands in local non volatile memory. Parameter: **<profile>** 0 - it saves the settings to NVM (factory default). 1..n - SIM profile number; the value of n depends on the SIM and its max is 3. Note: certain settings may not be supported by the SIM and therefore they are always saved to NVM, regardless the value of **<profile>**. Note: If parameter is omitted the settings are saved in the non volatile memory.

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+CSAS - Save Settings	
AT+CSAS=?	Test command returns the possible range of values for the parameter **<profile>**.
Reference	3GPP TS 27.005

3.5.5.2.7 Restore Settings - +CRES

+CRES - Restore Settings	
AT+CRES [=<profile>]	Execution command restores message service settings saved by **+CSAS** command from either NVM or SIM. Parameter: **<profile>** 0 - it restores message service settings from NVM. 1..n - it restores message service settings from SIM. The value of n depends on the SIM and its max is 3. Note: certain settings may not be supported by the SIM and therefore they are always restored from NVM, regardless the value of **<profile>**. Note: If parameter is omitted the command restores message service settings from NVM.
AT+CRES=?	Test command returns the possible range of values for the parameter **<profile>**.
Reference	3GPP TS 27.005

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3.5.5.3 Message Receiving And Reading

3.5.5.3.1 New Message Indications To Terminal Equipment - +CNMI

+CNMI - New Message Indications To Terminal Equipment	
AT+CNMI=[<mode>[,<mt> [,<bm>[,<ds> [,<bfr>]]]]]	Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the **DTE**. Parameter: **<mode>** - unsolicited result codes buffering option 0 - Buffer unsolicited result codes in the **TA**. If **TA** result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 - Discard indication and reject new received message unsolicited result codes when **TA-TE** link is reserved, otherwise forward them directly to the **TE**. 2 - Buffer unsolicited result codes in the TA in case the **DTE** is busy and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 - if **<mt>** is set to 1 an indication via 100 ms break is issued when a SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too. **<mt>** - result code indication reporting for SMS-DELIVER 0 - No SMS-DELIVER indications are routed to the TE. 1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code: **+CMTI: <memr>,<index>** where: **<memr>** - memory storage where the new message is stored "SM" "ME" **<index>** - location on the memory where SMS is stored. 2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the TE using the following unsolicited result code: **(PDU Mode)** **+CMT: <alpha>,<length><CR><LF><pdu>** where: **<alpha>** - alphanumeric representation of originator/destination number corresponding to the entry found in MT phonebook; used character set should be the one selected with command +CSCS. **<length>** - PDU length **<pdu>** - PDU message **(TEXT Mode)**

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+CNMI - New Message Indications To Terminal Equipment	
	+CMT:<oa>,<alpha>,<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data> (the information written in italics will be present depending on **+CSDH** last setting) where: **<oa>** - originating address, string type converted in the currently selected character set (see +CSCS) **<alpha>** - alphanumeric representation of **<oa>**; used character set should be the one selected with command +CSCS. **<scts>** - arrival time of the message to the SC ***<tooa>***, ***<tosca>*** - type of number **<oa>** or ***<sca>***: 129 - number in national format 145 - number in international format (contains the "**+**") ***<fo>*** - first octet of 3GPP TS 03.40/23.040 ***<pid>*** - Protocol Identifier ***<dcs>*** - Data Coding Scheme **<sca>** - Service Centre address, string type, converted in the currently selected character set (see +CSCS) ***<length>*** - text length **<data>** - TP-User-Data • If **<dcs>** indicates that GSM03.38/23.038 default alphabet is used and **<fo>** indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is not set (bit 6 of **<fo>** is 0), each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS) • If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used or **<fo>** indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is set (bit 6 of **<fo>** is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) Class 2 messages and messages in the message waiting indication group (stored message) result in indication as defined in **<mt>=1**. 3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in **<mt>=2**. Messages of other data coding schemes result in indication as defined in **<mt>=1**. **<bm>** - broadcast reporting option 0 - Cell Broadcast Messages are not sent to the **DTE** 2 - New Cell Broadcast Messages are sent to the **DTE** with the unsolicited result code: **(PDU Mode)** **+CBM: <length><CR><LF><PDU>** where: **<length>** - PDU length **<PDU>** - message PDU **(TEXT Mode)**

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+CNMI - New Message Indications To Terminal Equipment	
	+CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data> where: **<sn>** - message serial number **<mid>** - message ID **<dcs>** - Data Coding Scheme **<pag>** - page number **<pags>** - total number of pages of the message **<data>** - CBM Content of Message • If **<dcs>** indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS) • If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) **<ds>** - SMS-STATUS-REPORTs reporting option 0 - status report receiving is not reported to the **DTE** 1 - the status report is sent to the **DTE** with the following unsolicited result code: **(PDU Mode)** **+CDS: <length><CR><LF><PDU>** where: **<length>** - PDU length **<PDU>** - message PDU **(TEXT Mode)** **+CDS: <fo>,<mr>,,,<scts>,<dt>,<st>** where: **<fo>** - first octet of the message PDU **<mr>** - message reference number **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU 2 - if a status report is stored, then the following unsolicited result code is sent: **+CDSI: <memr>,<index>** where: **<memr>** - memory storage where the new message is stored "SR" **<index>** - location on the memory where SMS is stored **<bfr>** - buffered result codes handling method: 0 - **TA** buffer of unsolicited result codes defined within this command is flushed to the **TE** when **<mode>=1..3** is entered (**OK** response shall be

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+CNMI - New Message Indications To Terminal Equipment	
	given before flushing the codes) 1 - **TA** buffer of unsolicited result codes defined within this command is cleared when **<mode>=1..3** is entered.
AT+CNMI?	Read command returns the current parameter settings for **+CNMI** command in the form: **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>**
AT+CNMI=?	Test command reports the supported range of values for the **+CNMI** command parameters.
Reference	3GPP TS 27.005
Example	AT+CMGF=1 OK AT+CNMI=1,2,0,1,0 OK *Received message from network* +CMT: "+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE
Note	**DTR** signal is ignored, hence the indication is sent even if the **DTE** is inactive (**DTR** signal is **Low**). In this case the unsolicited result code may be lost so if MODULE remains active while **DTE** is not, at **DTE** startup is suggested to check whether new messages have reached the device meanwhile with command **AT+CMGL=0** that lists the new messages received.

3.5.5.3.2 List Messages - +CMGL

+CMGL - List Messages	
AT+CMGL [=<stat>]	Execution command reports the list of all the messages with status value **<stat>** stored into **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command +CPMS). The parameter type and the command output depend on the last settings of command **+CMGF** (message format to be used) **(PDU Mode)** Parameter: **<stat>** 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages. Each message to be listed is represented in the format:

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+CMGL - List Messages	
	+CMGL: <index>,<stat>,<alpha>,<length><CR><LF><pdu> where: **<index>** - message position in the memory storage list. **<stat>** - status of the message **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. **<length>** - length of the PDU in bytes **<pdu>** - message in PDU format according to 3GPP TS 3.40/23.040 **(Text Mode)** Parameter: **<stat>** "REC UNREAD" - new message "REC READ" - read message "STO UNSENT" - stored message not yet sent "STO SENT" - stored message already sent "ALL" - all messages. Each message to be listed is represented in the format (the information written in italics will be present depending on +CSDH last setting): **+CMGL: <index>,<stat>,<oa/da>,<alpha>,<scts>*[,<tooa/toda>, <length>]*<CR><LF> <data>** where **<index>** - message position in the storage **<stat>** - message status **<oa/da>** - originator/destination address, string type , represented in the currently selected character set (see +CSCS) **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. **<scts>** - TP-Service Centre Time Stamp in Time String Format ***<tooa/toda>*** - type of number **<oa/da>** 129 - number in national format 145 - number in international format (contains the "**+**") ***<length>*** - text length **<data>** - TP-User-Data • If **<dcs>** indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS) • If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two

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+CMGL - List Messages	
	characters 0x32 0x41) Each message delivery confirm is represented in the format**:** **+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>** where **<index>** - message position in the storage **<stat>** - message status **<fo>** - first octet of the message PDU **<mr>** - message reference number **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU Note: If parameter is omitted the command returns the list of sms with "**REC UNREAD**" status.
AT+CMGL=?	Test command returns a list of supported **<stat>**s
Example	AT+CMGF=1 *Set Text mode* OK AT+CMGL +CMGL: 1,"REC UNREAD","+821020955219",,"07/07/26,20:05:11+36" SMS Test message +CMGL: 2,"REC UNREAD","+821020955219",,"07/07/26,20:05:58+36" SMS Test message... +CMGL: 3,"REC UNREAD","+821020955219",,"07/07/26,20:06:37+36" SMS Test Message.. +CMGL: 4,"REC UNREAD","+821020955219",,"07/07/26,20:07:43+36" TEST MESSAGE.. +CMGL: 5,"REC UNREAD","+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE OK AT+CMGF=0 *Set PDU mode* OK AT+CMGL=2 +CMGL: 0,2,,24 0791280192919030116 40A81105678928200 00A70CF4F29C0E6A97E7F3F0B90C +CMGL: 1,2,,21 0791280192919030116 40A81105165297000 00A709027A794E77B95C2E

+CMGL - List Messages	
	+CMGL: 26,2,,17 0881280100990102591164 0A8110567892820014A704C7D1B1DB OK
Reference	3GPP TS 27.005

3.5.5.3.3 Read Message - +CMGR

+CMGR - Read Message	
AT+CMGR= <index>	Execution command reports the message with location value **<index>** from **<memr>** message storage (**<memr>** is the message storage for read and delete SMs as last settings of command +CPMS). Parameter: **<index>** - message index. The output depends on the last settings of command **+CMGF** (message format to be used) **(PDU Mode)** The output has the following format: **+CMGR: <stat>,<alpha>,<length><CR><LF><pdu>** where **<stat>** - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. **<length>** - length of the PDU in bytes. **<pdu>** - message in PDU format according to 3GPP TS 3.40/23.040. The status of the message and entire message data unit **<pdu>** is returned. **(Text Mode)** Output format for received messages (the information written in *italics* will be present depending on **+CSDH** last setting)*:* **+CMGR: <stat>,<oa>,<alpha>,<scts>*[,<tooa>,<fo>,<pid>, <dcs>,<sca>,<tosca>,<length>]*<CR><LF><data>** Output format for sent messages: **+CMGR: <stat>,<da>,<alpha>*[,<toda>,<fo>,<pid>,<dcs>*,,**

+CMGR - Read Message	
	<*sca*>,<*tosca*>,<*length*>]<CR><LF><data> Output format for message delivery confirm: **+CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st>** where: **<stat>** - status of the message "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent "STO SENT" - message stored already sent **<*fo*>** - first octet of the message PDU **<mr>** - message reference number **<scts>** - arrival time of the message to the SC **<dt>** - sending time of the message **<st>** - message status as coded in the PDU **<*pid*>** - Protocol Identifier **<*dcs*>** - Data Coding Scheme **<oa>** - Originator address, string type represented in the currently selected character set (see +CSCS) **<da>** - Destination address, string type represented in the currently selected character set (see +CSCS) **<alpha>** - string type alphanumeric representation of **<da>** or **<oa>**, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS. **<*sca*>** - Service Centre number **<*tooa*>,<*toda* >,<*tosca*>** - type of number **<oa>**,**<da>**,**<*sca*>** 129 - number in national format 145 - number in international format (contains the "**+**") **<*length*>** - text length **<data>** - TP-User_data • If **<dcs>** indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS) • If **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41) Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'. Note: an error result code is sent on empty record **<index>**.
AT+CMGR=?	Test command returns the **OK** result code
Example	`AT+CMGF=0` `AT+CMGR=1`

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+CMGR - Read Message	
	+CMGR: 2,,21 0791280192919030116 40A8110516529700000A709027A794E77B95C2E OK AT+CMGF=1 OK AT+CMGR=3 +CMGR: "REC READ","+821020955219",,"07/07/19,10:06:34+36" test message/..... OK
Reference	3GPP TS 27.005

3.5.5.3.4 New Message Acknowledgement to ME/TA - +CNMA

+CNMA – New Message Acknowledgement	
(PDU Mode) **AT+CNMA [=<n> [,<length> [<CR> PUD is given<ctrl-Z/ESC]]]**	*Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE.* Acknowledge with +CNMA is possible only if the +CSMS parameter is set to 1(+CSMS=1) when a +CMT or +CDS indication is show. If no acknowledgement is given within the network timeout, an RP-ERROR is sent to the network, the <mt> and <ds> parameters of the +CNMI command are then reset to zero (do not show new message indication). Either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible. Parameter: <n> - Type of acknowledgement in PDU mode 0 : send RP-ACK without PDU (same as TEXT mode) 1 : send RP-ACK with optional PDU message. 2 : send RP-ERROR with optional PDU message. <length> : Length of the PDU message. Note : Refer to 3GPP TS 23.040 Recommendation for other PDU negative acknowledgement codes.
(Text Mode) **AT+CNMA**	Only positive acknowledgement to network (RP-ACK) is possible.
(PDU Mode) **AT+CNMA=?**	Test command returns the possible range of values for the parameter <n>

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+CNMA – New Message Acknowledgement	
Example	**(PDU Mode)** *SMS AT commands compatible with 3GPP TS 27.005 Phase 2+ version.* AT+CSMS=1 +CSMS: 1,1,1 OK *Set PDU mode.* AT+CMGF=0 OK AT+CNMI=2,2,0,0,0 OK *Message is received from network.* +CMT: "",70 0681600058542600048098060 0F170110370537284… *Send positive acknowledgement to the network.* AT+CNMA=0 OK *Message is received from network.* +CMT: "",70 0681600058542600048098060 0F170110370537284… *Send negative acknowledgement(Unspecified error) to the network.* AT+CNMA=2,3<CR> > 00FF00 <Ctrl-Z> OK **(Text Mode)** *SMS AT commands compatible with 3GPP TS 27.005 Phase 2+ version.* AT+CSMS=1 +CSMS: 1,1,1 OK *Set Text mode.* AT+CMGF=1 OK AT+CNMI=2,2,0,0,0 OK *Message is received from network.*

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+CNMA – New Message Acknowledgement	
	+CMT: "+821020955219",,"07/07/26,20:09:07+36" TEST MESSAGE *Send positive acknowledgement to the network.* AT+CNMA OK
Reference	3GPP TS 27.005

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3.5.5.4 Message Sending And Writing

3.5.5.4.1 Send Message - +CMGS

+CMGS - Send Message	
(PDU Mode) **AT+CMGS= <length>**	**(PDU Mode)** Execution command sends to the network a message. Parameter: **<length>** - length of the PDU to be sent in bytes (excluding the SMSC address octets). 7..164 After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** and waits for the specified number of bytes. Note: the **DCD** signal shall be in **ON** state while PDU is given. Note: the echoing of given characters back from the TA is controlled by echo command **E** Note: the **PDU** shall be hexadecimal format (each octet of the **PDU** is given as two IRA character long hexadecimal number) and given in one line. Note: when the length octet of the SMSC address (given in the **PDU**) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the **PDU**. To send the message issue **Ctrl-Z** char (**0x1A** hex). To exit without sending the message issue **ESC** char (**0x1B** hex). If message is successfully sent to the network, then the result is sent in the format: Note : Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned: **+CMGS: <mr>[, <scts>]** where **<mr>** - message reference number. <scts> - TP-Service Centre Time Stamp in Time String Format. Note: if message sending fails for some reason, an error code is reported.

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+CMGS - Send Message	
	Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.
(Text Mode) **AT+CMGS=<da>[,<toda>]**	**(Text Mode)** Execution command sends to the network a message. Parameters: **<da>** - destination address, string type represented in the currently selected character set (see +CSCS). **<toda>** - type of destination address 129 - number in national format 145 - number in international format (contains the "**+**") After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** After this prompt text can be entered; the entered text should be formatted as follows: - if current **<dcs>** (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current **<fo>** (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM/WCDMA alphabet, according to 3GPP TS 27.005, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used. - if current **<dcs>** (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**) Note: the **DCD** signal shall be in **ON** state while text is entered. Note: the echoing of entered characters back from the TA is controlled by echo command **E** To send the message issue **Ctrl-Z** char (**0x1A** hex). To exit without sending the message issue **ESC** char (**0x1B** hex). If message is successfully sent to the network, then the result is sent in the format: Note : Optionally (when +CSMS <service> value is 1 and network supports)

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+CMGS - Send Message	
	<scts> is returned: **+CMGS: <mr>[, <scts>]** where **<mr>** - message reference number. <scts> - TP-Service Centre Time Stamp in Time String Format. Note: if message sending fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued. Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the **<dcs>**: 1530 chars if 3GPP TS 03.38/23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used
AT+CMGS=?	Test command resturns the **OK** result code.
Note	To avoid malfunctions is suggested to wait for the **+CMGS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands.
Example	*Set PDU mode* AT+CMGF=0 AT+CMGS=18 > 088128010099010259115507811020905512F90000A704F4F29C0E +CMGS: 124 OK *Set text mode* AT+CMGF=1 AT+CSMP=17,167,0,0 AT+CMGS=”01090255219”,129 >TEST MESSAGE +CMGS:125 OK
Reference	3GPP TS 27.005

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3.5.5.4.2 Send Message From Storage - +CMSS

+CMSS - Send Message From Storage	
AT+CMSS= <index>[,<da> [,<toda>]]	Execution command sends to the network a message which is already stored in the **<memw>** storage (see **+CPMS**) at the location **<index>**. Parameters: **<index>** - location value in the message storage **<memw>** of the message to send **<da>** - destination address, string type represented in the currently selected character set (see **+CSCS**); if it is given it shall be used instead of the one stored with the message. **<toda>** - type of destination address 129 - number in national format 145 - number in international format (contains the "**+**") If message is successfully sent to the network then the result is sent in the format: (Note : Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned) **+CMSS: <mr>[, <scts>]** where: **<mr>** - message reference number. <scts> - TP-Service Centre Time Stamp in Time String Format. If message sending fails for some reason, an error code is reported: **+CMS ERROR:<err>** Note: to store a message in the **<memw>** storage see command **+CMGW.** Note: care must be taken to ensure that during the command execution, which may take several seconds, no other **SIM** interacting commands are issued.
AT+CMSS=?	Test command resturns the **OK** result code.
Note	To avoid malfunctions is suggested to wait for the **+CMSS: <mr>** or **+CMS ERROR: <err>** response before issuing further commands.

Example	`AT+CMGF=1`
	`OK`
	`AT+CMGW="0165872928"`
	`> test message...`
	
	`+CMGW: 28`
	`AT+CMSS=28`
	`+CMSS: 136`
	
	`OK`

Reference	3GPP TS 27.005

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3.5.5.4.3 Write Message To Memory - +CMGW

+CMGW - Write Message To Memory	
(PDU Mode) **AT+CMGW=** **<length>** **[,<stat>]**	**(PDU Mode)** Execution command writes in the **<memw>** memory storage a new message. Parameter: **<length>** - length in bytes of the PDU to be written. 7..164 **<stat>** - message status. 0 - new message 1 - read message 2 - stored message not yet sent (default) 3 - stored message already sent The device responds to the command with the prompt '>' and waits for the specified number of bytes. To write the message issue **Ctrl-Z** char (**0x1A** hex). To exit without writing the message issue **ESC** char (**0x1B** hex). If message is successfully written in the memory, then the result is sent in the format: **+CMGW: <index>** where: **<index>** - message location index in the memory **<memw>**. If message storing fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued.
(Text Mode) **AT+CMGW[=<da>** **[,<toda>** **[,<stat>]]]**	**(Text Mode)** Execution command writes in the **<memw>** memory storage a new message. Parameters: **<da>** - destination address, string type represented in the currently selected character set (see +CSCS). **<toda>** - type of destination address. 129 - number in national format 145 - number in international format (contains the "**+**") **<stat>** - message status. "REC UNREAD" - new received message unread "REC READ" - received message read

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+CMGW - Write Message To Memory	
	"STO UNSENT" - message stored not yet sent (default) "STO SENT" - message stored already sent After command line is terminated with **<CR>**, the device responds sending a four character sequence prompt: **<CR><LF><greater_than><space> (IRA 13, 10, 62, 32)** After this prompt text can be entered; the entered text should be formatted as follows: - if current **<dcs>** (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current **<fo>** (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM/WCDMA alphabet, according to 3GPP TS 27.005, Annex A; **backspace** can be used to delete last character and **carriage returns** can be used. - if current **<dcs>** (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current **<fo>** (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the **'asterisk'** will be entered as **2A** (**IRA50** and **IRA65**) and this will be converted to an octet with integer value **0x2A**) Note: the **DCD** signal shall be in ON state while text is entered. Note: the echoing of entered characters back from the TA is controlled by echo command **E** To write the message issue **Ctrl-Z** char (**0x1A** hex). To exit without writing the message issue **ESC** char (**0x1B** hex). If message is successfully written in the memory, then the result is sent in the format: **+CMGW: <index>** where: **<index>** - message location index in the memory **<memw>**. If message storing fails for some reason, an error code is reported. Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued. Note: it is possible to save a concatenation of at most 10 SMs; the

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+CMGW - Write Message To Memory	
	maximum number of chars depends on the **<dcs>**: 1530 chars if 3GPP TS 03.38/23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used
AT+CMGW=?	Test command returns the **OK** result code.
Reference	3GPP TS 27.005
Example	AT+CMGF=0 *set PDU mode* OK AT+CMGW=18 > 0881280100990102591155078110209055 12F90000A704F4F29C0E +CMGW: 29 OK AT+CMGF=1 *set text mode* OK AT+CSMP=17,167,0,0 OK AT+CSCA=”821029190903”,145 OK AT+CMGW="0165872928" > test message... +CMGW: 28
Note	To avoid malfunctions is suggested to wait for the **+CMGW: <index>** or **+CMS ERROR: <err>** response before issuing further commands.

3.5.5.4.4 Delete Message - +CMGD

+CMGD - Delete Message	
AT+CMGD= <index> [,<delflag>]	Execution command deletes from memory **<memr>** the message(s). Parameter: **<index>** - message index in the selected storage **<memr>** **<delflag>** - an integer indicating multiple message deletion request. 0 (or omitted) - delete message specified in **<index>** 1 - delete all read messages from **<memr>** storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched 2 - delete all read messages from **<memr>** storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched 3 - delete all read messages from **<memr>** storage, sent and unsent mobile originated messages, leaving unread messages untouched 4 - delete all messages from **<memr>** storage.

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+CMGD - Delete Message	
	Note: if **<delflag>** is present and not set to 0 then **<index>** is ignored and ME shall follow the rules for **<delflag>** shown above. Note: if the location to be deleted is empty, an error message is reported.
AT+CMGD=?	Test command shows the valid memory locations and optionally the supported values of **<delflag>**. **+CMGD: (supported <index>s list)[,(supported <delflag>s list)]**
Example	AT+CMGD=? +CMGD: (0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50),(0-4) OK AT+CMGD=11 *Delete message in 10th record* OK AT+CMGD=1,4 *Delete all messages* OK
Reference	3GPP TS 27.005

3.5.5.4.5 More Message to Send - +CMMS

+CMMS – More Message to Send	
AT+CMMS=[<n>]	Set command controls the continuity of SMS relay protocol link. Multiple messages can be sent much faster as link is kept open. Parameter: <n> 0 - Disable 1 - Keep link opened while messages are sent. If the delay between two messages exceeds 3 seconds, the link is closed and the mode is reset to 0: the feature is disabled. 2 - Keep link opened while messages are sent. If the delay between two messages exceeds 3 seconds, the link is closed but the mode remains set to 2: the feature is still enabled.
AT+CMMS?	Read command reports the current value of the parameter <n>.
AT+CMMS=?	Test command reports the supported value of <n> parameter.
Reference	3GPP TS 27.005

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3.5.6 FAX Class 1 AT Commands

3.5.6.1 General Configuration

3.5.6.1.1 Manufacturer ID - +FMI

+FMI - Manufacturer ID	
AT+FMI?	Read command reports the manufacturer ID. The output depends on the choice made through **#SELINT** command.
Example	AT+FMI? Telit OK
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.1.2 Model Id - +FMM

+FMM - Model ID	
AT+FMM?	Read command reports the model ID
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.1.3 Revision ID - +FMR

+FMR - Revision ID	
AT+FMR?	Read command reports the software revision ID
Reference	ITU T.31 and TIA/EIA-578-A specifications

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3.5.6.2 Transmission/Reception Control

3.5.6.2.1 Stop Transmission And Pause - +FTS

+FTS - Stop Transmission And Pause	
AT+FTS=<time>	Execution command causes the modem to terminate a transmission and wait for **<time>** 10ms intervals before responding with **OK** result. Parameter: **<time>** - duration of the pause, expressed in 10ms intervals. 0..255
AT+FTS=?	Test command returns all supported values of the parameter **<time>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.2.2 Wait For Receive Silence - +FRS

+FRS - Wait For Receive Silence	
AT+FRS=<time>	Execution command causes the modem to listen and report **OK** when silence has been detected for the specified period of time. This command will terminate when the required silence period is detected or when the **DTE** sends another character other than **XON** or **XOFF**. Parameter: **<time>** - amount of time, expressed in 10ms intervals. ..0..255
AT+FRS=?	Test command returns all supported values of the parameter **<time>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.2.3 Transmit Data Modulation - +FTM

+FTM - Transmit Data	
AT+FTM=<mod>	Execution command causes the module to transmit facsimile data using the modulation defined by the parameter **<mod>**. Parameter: **<mod>** - carrier modulation 72 - V29/7200 bps 73 - V17/7200 bps Training Long 74 - V17/7200 bps Training Short 96 - V29/9600 bps

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+FTM - Transmit Data	
	97 - V17/9600 bps Training Long 98 - V17/9600 bps Training Short
AT+FTM=?	Test command returns all supported values of the parameter **<mod>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.2.4 Receive Data Modulation - +FRM

+FRM - Receive Data Modulation	
AT+FRM=<mod>	Execution command causes the module to transmit facsimile data using the modulation defined by the parameter **<mod>**. Parameter: **<mod>** - carrier modulation 72 - V29/7200 bps 73 - V17/7200 bps Training Long 74 - V17/7200 bps Training Short 96 - V29/9600 bps 97 - V17/9600 bps Training Long 98 - V17/9600 bps Training Short
AT+FRM=?	Test command returns all supported values of the parameter **<mod>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.2.5 Transmit Data With HDLC Framing - +FTH

+FTH - Transmit Data With HDLC Framing	
AT+FTH=<mod>	Execution command causes the module to transmit facsimile data using HDLC protocol and the modulation defined by the parameter **<mod>**. Parameter: **<mod>** - carrier modulation 3 - V21/300 bps
AT+FTH=?	Test command returns all supported values of the parameter **<mod>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

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3.5.6.2.6 Receive Data With HDLC Framing - +FRH

+FRH - Receive Data Data With HDLC Framing	
AT+FRH=<mod>	Execution command causes the module to receive facsimile data using HDLC protocol and the modulation defined by the parameter **<mod>**. Parameter: **<mod>** - carrier modulation 3 - V21/300 bps
AT+FRH=?	Test command returns all supported values of the parameter **<mod>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

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3.5.6.3 Serial Port Control

3.5.6.3.1 Select Flow Control Specified By Type - +FLO

+FLO - Select Flow Control Specified By Type	
AT+FLO=<type>	Set command selects the flow control behaviour of the serial port in both directions: from **DTE** to **DTA** and from **DTA** to **DTE**. Parameter: **<type>** - flow control option for the data on the serial port 0 - flow control None 1 - flow control Software (**XON**-**XOFF**) 2 - flow control Hardware (**CTS**-**RTS**) – (factory default) Note: This command is a shortcut of the +IFC command. Note: **+FLO's** settings are functionally a subset of &K's ones.
AT+FLO?	Read command returns the current value of parameter **<type>**
AT+FLO=?	Test command returns all supported values of the parameter **<type>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.3.2 Select Serial Port Rate - +FPR

+FPR - Select Serial Port Rate	
AT+FPR=<rate>	Set command selects the serial port speed in both directions, from **DTE** to **DTA** and from **DTA** to **DTE**. When autobauding is selected, then the speed is detected automatically. Parameter: **<rate>** - serial port speed selection 1 – 2400bps 2 – 4800bps 4 – 9600bps 8 -19200bps 10 -38400bps 18 – 57600bps
AT+FPR?	Read command returns the current value of parameter **<rate>**
AT+FPR=?	Test command returns all supported values of the parameters **<rate>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

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3.5.6.3.3 Double Escape Character Replacement Control - +FDD

+FDD - Double Escape Character Replacement Control	
AT+FDD=<mode>	Set command concerns the use of the **<DLE><SUB>** pair to encode consecutive escape characters (**<10h><10h>**) in user data. Parameter: **<mode>** 0 - currently the only available value. The **DCE** decode of **<DLE><SUB>** is either **<DLE><DLE>** or discard. The DCE encode of **<10h><10h>** is **<DLE><DLE><DLE><DLE>** **1 -** The **DCE** decode of **<DLE><SUB>** is either **<DLE><DLE>**. The DCE encode of **<10h><10h>** is **<DLE><SUB><DLE><SUB>**
AT+FDD?	Read command returns the current value of parameter **<mode>**
AT+FDD=?	Test command returns all supported values of parameter **<mode>**. Note: test command result is without command echo
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.3.4 DTE inactivity timeout - +FIT

+FIT - DTE inactivity timeout	
AT+FIT=[<time>[,<action]]	Execution command sets DTE inactivity timeout Parameter: **<time>** : indicates the DTE inactivity timeout in seconds. The required timeout is 1 to 255 seconds. The value of 0 indicates that timeout is disabled. 0 - 255 **<action>** 0 - Upon timeout, the DCE shall go on-hook, executing an implied ATH command; then reset to +FCLASS = 0 if +FCLASS = 0 is supported by the DCE 1- Upon timeout, the DCE shall only go on-hook. This feature is used to detect possible system failure, when either no line or DTE activity has occurred for a minimum amount of time Note: The inactivity timer starts when the DCE has taken some action that requires DTE response. If the DTE does respond, the DCE shall reset the inactivity timer.
AT+FIT?	Read command reports the current value of the parameters
AT+FIT=?	Test command returns all supported values of the parameters.
Reference	ITU T.31 and TIA/EIA-578-A specifications

3.5.6.3.5 Carrier loss timeout - +FCL

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+FCL - Carrier loss timeout	
AT+FCL=[<time>]	Execution command sets carrier loss timeout Parameter: **< time >** 0 - 255 Note: The FCL parameter allows the DTE to select the DCE's loss-of-carrier delay between initial loss-of-carrier and qualified loss-of-carrier, when the DCE will give up and exit a receive mode.
AT+FCL?	Read command reports the current value of the parameter.
AT+FCL=?	Test command returns all supported values of the parameter.
Reference	ITU T.31 and TIA/EIA-578-A specifications

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3.5.7 Custom AT Commands

3.5.7.1 General Configuration AT Commands

3.5.7.1.1 Manufacturer Identification - #CGMI

#CGMI - Manufacturer Identification	
AT#CGMI	Execution command returns the device manufacturer identification code with command echo. The output depends on the choice made through #SELINT command.
AT#CGMI=?	Test command returns the **OK** result code.
Example	AT#CGMI Telit Wireless Solutions OK

3.5.7.1.2 Model Identification - #CGMM

#CGMM - Model Identification	
AT#CGMM	Execution command returns the device model identification code with command echo.
AT#CGMM=?	Test command returns the **OK** result code.
Example	AT#CGMM UC864 OK

3.5.7.1.3 Revision Identification - #CGMR

#CGMR - Revision Identification	
AT#CGMR	Execution command returns device software revision number with command echo.
AT#CGMR=?	Test command returns the **OK** result code.
Example	AT#CGMR KAN02TL3 1 [Jul 12 2007 04:00:00] OK

3.5.7.1.4 Product Serial Number Identification - #CGSN

#CGSN - Product Serial Number Identification	
AT#CGSN	Execution command returns the product serial number, identified as the IMEI of the mobile, with command echo.
AT#CGSN=?	Test command returns the **OK** result code.
Example	AT#CGSN

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#CGSN - Product Serial Number Identification	
	358677008900540 OK

3.5.7.1.5 International Mobile Subscriber Identity (IMSI) - #CIMI

#CIMI - International Mobile Subscriber Identity (IMSI)	
AT#CIMI	Execution command returns the international mobile subscriber identity, identified as the IMSI number, with command echo.
AT#CIMI=?	Test command returns the **OK** result code.
Example	AT#CIMI 450050209516643 OK

3.5.7.1.6 Read ICCID (Integrated Circuit Card Identification) - #CCID

#CCID - Read ICCID	
AT#CCID	Execution command reads on SIM the ICCID (card identification number that provides a unique identification number for the SIM)
AT#CCID=?	Test command returns the **OK** result code.
Example	AT#CCID 89820507021001676 84F OK

3.5.7.1.7 Service Provider Name - #SPN

#SPN - Service Provider Name	
AT#SPN	Execution command returns the service provider string contained in the SIM field **SPN**, in the format: **#SPN: <spn>** where: **<spn>** - service provider string contained in the SIM field **SPN**, represented in the currently selected character set (see **+CSCS**). Note: if the SIM field SPN is empty, the command returns just the **OK** result code
AT#SPN=?	Test command returns the **OK** result code.

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3.5.7.1.8 Change Audio Path - #CAP

#CAP - Change Audio Path	
AT#CAP=[<n>]	Set command switches the active audio path depending on parameter **<n>** Parameter: **<n>** - audio path 0 - audio path follows the **AXE** input (factory default): • if **AXE** is low, handsfree is enabled; • if **AXE** is high, internal path is enabled 1 - enables handsfree external mic/ear audio path 2 - enables internal mic/ear audio path Note: The audio path are mutually exclusive, enabling one disables the other. Note: when changing the audio path, the volume level is set at the previously stored value for that audio path (see **+CLVL**).
AT#CAP?	Read command reports the active audio path in the format: **#CAP: <n>**.
AT#CAP=?	Test command reports the supported values for the parameter **<n>**.

3.5.7.1.9 Open Audio Loop - #OAP

#OAP – Open Audio Loop	
AT#OAP= <mode>	Set command sets Open Audio Path. Parameter: 0 - disables Open Audio Path (default) 1 - enables Open Audio Path *Note: This parameter is not saved in NVM*
AT#OAP?	Read command returns the current Open Audio Path, in the format: **#OAP: <mode>**
AT#OAP =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.7.1.10 Select Ringer Sound - #SRS

#SRS - Select Ringer Sound	
AT#SRS= [<n>,<tout>]	Set command sets the ringer sound. Parameters:

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#SRS - Select Ringer Sound	
	<n> - ringing tone 0 - current ringing tone 1..*max* - ringing tone number, where *max* can be read by issuing the Test command **AT#SRS=?**. **<tout>** - ringing tone playing time-out in seconds. 0 - ringer is stopped (if present) and current ringer sound is set. 1..60 - ringer sound playing for **<tout>** seconds and, if **<n> > 0,** ringer sound **<n>** is set as default ringer sound. Note: when the command is issued with **<n> > 0** and **<tout> > 0**, the **<n>** ringing tone is played for **<tout>** seconds and stored as default ringing tone. Note: if command is issued with **<n> > 0** and **<tout> = 0**, the playing of the ringing is stopped (if present) and **<n>** ringing tone is set as current. Note: if command is issued with **<n> = 0** and **<tout> > 0** then the current ringing tone is played. Note: if both **<n>** and **<tout>** are **0** then the default ringing tone is set as current and ringing is stopped. Note: If all parameters are omitted then the behaviour of Set command is the same as Read command
AT#SRS?	Read command reports current selected ringing and its status in the form: **#SRS: <n>,<status>** where: **<n>** - ringing tone number 1..*max* **<status>** - ringing status 0 - selected but not playing 1 - currently playing
AT#SRS=?	Test command reports the supported values for the parameters **<n>** and **<tout>**

3.5.7.1.11 Select Ringer Path - #SRP

#SRP - Select Ringer Path	
AT#SRP=[<n>]	Set command selects the ringer path towards whom sending ringer sounds and all signalling tones. Parameter: **<n>** - ringer path number 0 - sound output towards current selected audio path (see command **#CAP**) 1 - sound output towards handsfree

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#SRP - Select Ringer Path	
	2 - sound output towards handset 3 - sound output towards Buzzer Output pin GPIO7 Note: In order to use the Buzzer Output an external circuitry must be added to drive it properly from the GPIO7 pin, furthermore the GPIO7 pin direction must be set to Buzzer output (Alternate function); see command **#GPIO**.
AT#SRP?	Read command reports the selected ringer path in the format: **#SRP: <n>**.
AT#SRP=?	Test command reports the supported values for the parameter **<n>**.
Example	AT#SRP=? #SRP: (0-3) OK AT#SRP=3 OK

3.5.7.1.12 Signalling Tones Mode - #STM

#STM - Signalling Tones Mode	
AT#STM=[<mode>]	Set command enables/disables the signalling tones output on the audio path selected with **#SRP** command Parameter: **<mode>** - signalling tones status 0 - signalling tones disabled 1 - signalling tones enabled 2 – all tones disabled Note: **AT#STM=0** has the same effect as **AT+CALM=2**; **AT#STM=1** has the same effect as AT+CALM**=0**.
AT#STM?	Read command reports whether the current signaling tones status is enabled or not, in the format: **#STM: <mode>**
AT#STM=?	Test command reports supported range of values for parameter **<mode>**.

3.5.7.1.13 Tone Playback - #TONE

#TONE - Tone Playback	
AT#TONE=<tone>[,<duration>]	Execution command allows the playback of either a single DTMF tone or a dial tone for a specified period of time. Parameters:

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#TONE - Tone Playback	
	<tone> - tone to be reproduced (0-9), #, *, (A-D) - dtmf tone (G-L) - user defined tones (unused) Y - free tone Z - busy tone **<duration>** - playback duration in 1/10 sec. 1..300 - tenth of seconds (default is 30)
AT#TONE=?	Test command returns the supported range of values for parameters **<tone>** and **<duration**>.

3.5.7.1.14 Display PIN Counter - #PCT

#PCT - Display PIN Counter	
AT#PCT	Execution command reports the PIN/PUK or PIN2/PUK2 input remaining attempts, depending on **+CPIN** requested password in the format: **#PCT: <n>** where: **<n>** - remaining attempts 0 - the SIM is blocked. 1..3 - if the device is waiting either SIM PIN or SIM PIN2 to be given. 1..10 - if the device is waiting either SIM PUK or SIM PUK2 to be given.
AT#PCT=?	Test command returns the OK result code.
Example	AT+CPIN? +CPIN: SIM PIN OK AT#PCT *Check PIN remained counter* #PCT: 3 OK AT+CPIN=1111 *Input incorrect PIN number* +CME ERROR: incorrect password AT#PCT #PCT: 2

3.5.7.1.15 Software Shut Down - #SHDN

#SHDN - Software Shutdown	
AT#SHDN	Execution command causes device detach from the network and shut down. Before definitive shut down an **OK** response is returned. Note: after the issuing of this command any previous activity is terminated and the device will not respond to any further command.

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#SHDN - Software Shutdown	
	Note: to turn it on again Hardware pin ON/OFF must be tied **low**. Note: to turn it off, USB_VBUS pin must be tied **low**.
AT#SHDN=?	Test command returns the OK result code.

3.5.7.1.16 Wake From Alarm Mode - #WAKE

#WAKE - Wake From Alarm Mode	
AT#WAKE= [<opmode>]	Execution command stops any eventually present alarm activity and, if the module is in **alarm mode**, it exits the **alarm mode** and enters the **normal operating mode**. Parameter: **<opmode>** - operating mode 0 - normal operating mode; the module exits the **alarm mode**, enters the **normal operating mode**, any alarm activity is stopped (e.g. alarm tone playing) and an **OK** result code is returned. Note: The "alarm mode" is indicated by hardware pin **CTS** to the **ON** status and **DSR** to the **OFF** status, while the "power saving" status is indicated by a **CTS** - **OFF** ,**DSR** - **OFF** and USB_VBUS – OFF status. The normal operating status is indicated by **DSR** – **ON or USB_VBUS – ON status**. Note: during the **alarm mode** the device will not make any network scan and will not register to any network and therefore is not able to dial or receive any call or SM, the only commands that can be issued to the MODULE in this state are the **#WAKE** and **#SHDN**, every other command must not be issued during this state.
AT#WAKE?	Read command returns the **operating status** of the device in the format: **#WAKE: <status>** where: **<status>** 0 - normal operating mode 1 - alarm mode or normal operating mode with some alarm activity.

3.5.7.1.17 Query Temperature Overflow - #QTEMP

#QTEMP - Query Temperature Overflow	
AT#QTEMP= [<mode>]	Set command has currently no effect. The interpretation of parameter **<mode>** is currently not implemented: any value assigned to it will simply have no effect.

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#QTEMP - Query Temperature Overflow	
	Response format
AT#QTEMP?	Read command queries the device internal temperature sensor for over temperature and reports the result in the format: **#QTEMP: <temp>** where: **<temp>** - over temperature indicator 0 - the device temperature is in the working range 1 - the device temperature is out of the working range
#QTEMP=?	Test command reports supported range of values for parameter **<mode>**.
Note	The device should not be operated out of its working temperature range, elsewhere proper functioning of the device is not ensured.

3.5.7.1.18 Temperature Monitor - #TEMPMON

#TEMPMON - Temperature Monitor	
AT#TEMPMON= <mod> [,<urcmode> [,<action> [,<hyst_time> [,<GPIO>]]]]	Set command sets the behaviour of the module internal temperature monitor. Parameters: **<mod>** 0 - sets the command parameters. 1 - triggers the measurement of the module internal temperature, reporting the result in the format: **#TEMPMEAS: <level>,<value>** where: **<level>** - threshold level -2 - extreme temperature lower bound (see Note) -1 - operating temperature lower bound (see Note) 0 - normal temperature 1 - operating temperature upper bound (see Note) 2 - extreme temperature upper bound (see Note) **<value>** actual temperature expressed in Celsius degrees **Setting of the following optional parameters has meaning only if <mod>=0:**

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<urcmode> - URC presentation mode.

0 - it disables the presentation of the temperature monitor URC

1 - it enables the presentation of the temperature monitor URC, whenever the module internal temperature reaches either operating or extreme levels; the unsolicited message is in the format:

#TEMPMEAS: <level>,<value>

where:

<level> and **<value>** are as before

<action> - sum of integers, each representing the action to be done whenever the module internal temperature reaches either operating or extreme levels (default is 0). If **<action>** is not zero, it is mandatory to set the **<hyst_time>** parameter too.

0 - no action (00)

1 - automatic shut-down when the temperature is beyond the extreme bounds (01)

2 - RF TX circuits automatically disabled (using **+CFUN=2**) when operating temperature bounds are reached. When the temperature is back to normal the module is brought back to the previous state, before RF TX disabled. (10)

4 - the output pin **<GPIO>** is tied HIGH when operating temperature bounds are reached; when the temperature is back to normal the output pin **<GPIO>** is tied LOW. If this **<action>** is required, it is mandatory to set the **<GPIO>** parameter too. (100)

Note: Possible values for the parameter **<action>** are form 0 to 7 (000, 001, 010, 011, 100, 101, 110 and 111)

<hyst_time> - hysteresis time: all the actions happen only if the extreme or operating bounds are maintained at least for this period. This parameter is needed and required if **<action>** is not zero.

0..255 - time in seconds

Note: **<action>** can assume values from 1-7

<GPIO> - GPIO number. Valid range is “any output pin” (see “Hardware User’s Guide”). This parameter is needed and required only if **<action>=4** is enabled.

Note: **if the <GPIO> is specified <action> shall** assume values from 4-7.

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	Note: last **<urcmode>** settings are saved as extended profile parameters. Note: last **<action>**, **<hyst_time>** and **<GPIO>** settings are global parameters saved in NVM
AT#TEMPMON?	Read command reports the current parameter settings for **#TEMPMON** command in the format: **#TEMPMON: <urcmode>,<action>[,<hyst_time>[,<GPIO>]]**
AT#TEMPMON=?	Test command reports the supported range of values for parameters **<mod>**, **<urcmode>**, **<action>**, **<hyst_time>** and **<GPIO>**
Note	<table><tr><td>Extreme Temperature Lower Bound(*)</td><td>-30℃</td></tr><tr><td>Operating Temperature Lower Bound(*)</td><td>-10℃</td></tr><tr><td>Operating Temperature</td><td></td></tr><tr><td>Operating Temperature Upper Bound(*)</td><td>+55℃</td></tr><tr><td>Extreme Temperature Upper Bound(*)</td><td>+80℃</td></tr></table> (*) Due to temperature measurement uncertainty there is a tolerance of +/-2℃

3.5.7.1.19 General Purpose Input/Output Pin Control - #GPIO

#GPIO - General Purpose Input/Output Pin Control	
AT#GPIO=[<pin>, <mode>[,<dir>]]	Execution command sets the value of the general purpose output pin **GPIO<pin>** according to **<dir>** and **<mode>** parameter. Not all configuration for the three parameters are valid. Parameters: **<pin>** - GPIO pin number; supported range is from 1 to a value that depends on the hardware. **<mode>** - its meaning depends on **<dir>** setting: 0 - no meaning if **<dir>=0** - INPUT - output pin cleared to 0 (**Low**) if **<dir>=1** - OUTPUT - no meaning if **<dir>=2** - ALTERNATE FUNCTION 1 - no meaning if **<dir>=0** - INPUT - output pin set to 1 (**High**) if **<dir>=1** - OUTPUT - no meaning if **<dir>=2** - ALTERNATE FUNCTION 2 - Reports the read value from the input pin if **<dir>=0** - INPUT - Reports the read value from the input pin if **<dir>=1** - OUTPUT

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#GPIO - General Purpose Input/Output Pin Control	
	- Reports a no meaning value if **<dir>=2** - ALTERNATE FUNCTION **<dir>** - GPIO pin direction 0 - pin direction is INPUT 1 - pin direction is OUTPUT 2 - pin direction is ALTERNATE FUNCTION (see Note). Note: when **<mode>=2** (and **<dir>** is omitted) the command reports the direction and value of pin **GPIO<pin>** in the format: **#GPIO: <dir>,<stat>** where: **<dir>** - current direction setting for the **GPIO<pin>** **<stat>** • logic value read from pin **GPIO<pin>** in the case the pin **<dir>** is set to input; • logic value present in output of the pin **GPIO<pin>** in the case the pin **<dir>** is currently set to output; • no meaning value for the pin **GPIO<pin>** in the case the pin **<dir>** is set to alternate function. Note: "ALTERNATE FUNCTION" value is valid only for following pins: • **GPIO4** - alternate function is “RF Transmission Control” • **GPIO5** - alternate function is “RF Transmission Monitor” • **GPIO6** - alternate function is "Alarm Output" (see **+CALA**) • **GPIO7** - alternate function is "Buzzer Output" (see **#SRP**) • **GPIO10** – alterantive function is “DVI TX” (See #DVI) • **GPIO12** – alternative function is “call key” • **GPIO13** – alternative function is “ACTIVE” • **GPIO17** – alternative function is “DVI SYNC” (See #DVI) • **GPIO18** – alternative function is “DVI RX” (See #DVI) Note: while using the pins in the alternate function, the GPIO read/write access to that pin is not accessible and shall be avoided.
AT#GPIO?	Read command reports the read direction and value of all **GPIO** pins, in the format: **#GPIO: <dir>,<stat>[<CR><LF>#GPIO: <dir>,<stat>[…]]** where: **<dir>** - as seen before **<stat>** - as seen before
AT#GPIO=?	Test command reports the supported range of values of the command parameters **<pin>**, **<mode>** and **<dir>**.
Example	`AT#GPIO=3,0,1` `OK`

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#GPIO - General Purpose Input/Output Pin Control	
	AT#GPIO=3,2 #GPIO: 1,0 OK AT#GPIO=4,1,1 OK AT#GPIO=5,0,0 OK AT#GPIO=6,2 #GPIO: 0,1 OK

3.5.7.1.20 STAT_LED GPIO Setting - #SLED

#SLED - STAT_LED GPIO Setting	
AT#SLED=<mode> [,<on_duration> [,<off_duration>]]	Set command sets the behaviour of the **STAT_LED** GPIO Parameters: **<mode>** - defines how the **STAT_LED** GPIO is handled 0 - GPIO tied **Low** 1 - GPIO tied **High** 2 - GPIO handled by Module Software (factory default) 3 - GPIO is turned on and off alternatively, with period defined by the sum **<on_duration> + <off_duration>** <**on_duration**> - duration of period in which **STAT_LED** GPIO is tied **High** while **<mode>=3** 1..100 - in tenth of seconds (default is 10) <**off_duration**> - duration of period in which **STAT_LED** GPIO is tied **Low** while **<mode>=3** 1..100 - in tenth of seconds (default is 10) Note: values are saved in NVM by command **#SLEDSAV** Note: at module boot the **STAT_LED** GPIO is always tied **High** and holds this value until the first NVM reading.
AT#SLED?	Read command returns the **STAT_LED** GPIO current setting, in t he format: **#SLED: <mode>,<on_duration>,<off_duration>**
AT#SLED=?	Test command returns the range of available values for parameters **<mode>**, **<on_duration>** and **<off_duration>**.

3.5.7.1.21 Save STAT_LED GPIO Setting - #SLEDSAV

#SLEDSAV - Save STAT_LED GPIO Setting	
AT#SLEDSAV	Execution command saves **STAT_LED** setting in NVM.
AT#SLED=?	Test command returns **OK** result code.

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3.5.7.1.22 Digital Voiceband Interface - #DVI

#DVI - Digital Voiceband Interface	
AT#DVI=<mode> [,<dviport>, <clockmode>]	Set command enables/disables the Digital Voiceband Interface. Parameters: **<mode>** - enables/disables the DVI. 0 - disable DVI; audio is forwarded to the analog line; DVI pins can be used for other purposes, like GPIO, etc. (factory default) 1 - enable DVI; audio is forwarded to the DVI block **<dviport>** 2 - DVI port 2 will be used **<clockmode>** 0 - DVI slave 1 - DVI master (factory default) Note: **#DVI** parameters are saved in the extended profile
AT#DVI?	Read command reports last setting, in the format: **#DVI: <mode>,<dviport>,<clockmode>**
AT#DVI=?	Test command reports the range of supported values for parameters **<mode>,<dviport>** and **<clockmode>**
Example	AT#DVI=1,2,1 OK *DVI activated for audio. DVI is configured as master providing on DVI Port #2*

3.5.7.1.23 SMS Ring Indicator - #E2SMSRI

#E2SMSRI - SMS Ring Indicator	
AT#E2SMSRI= [<n>]	Set command enables/disables the Ring Indicator pin response to an incoming SMS message. If enabled, a negative going pulse is generated on receipt of an incoming SMS message. The duration of this pulse is determined by the value of **<n>**. Parameter: **<n>** - **RI** enabling 0 - disables **RI** pin response for incoming SMS messages (factory default) 50..1150 - enables **RI** pin response for incoming SMS messages. The value of **<n>** is the duration in ms of the pulse generated on receipt of an incoming SM. Note: if **+CNMI=3,1** command is issued and the module is in a GPRS connection, a 100 ms break signal is sent and a 1 sec. pulse is generated on **RI** pin, no matter if the **RI** pin response is either enabled or not.

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#E2SMSRI - SMS Ring Indicator	
AT#E2SMSRI?	Read command reports the duration in ms of the pulse generated on receipt of an incoming SM, in the format: **#E2SMSRI: <n>** Note: as seen before, the value **<n>=0** means that the **RI** pin response to an incoming SM is disabled.
AT#E2SMSRI=?	Reports the range of supported values for parameter **<n>**
Example	AT#E2SMSRI=50 OK

3.5.7.1.24 Read Analog/Digital Converter Input - #ADC

#ADC - Read Analog/Digital Converter Input	
AT#ADC= [<adc>,<mode> [,<dir>]]	Execution command reads pin**<adc>** voltage, converted by ADC, and outputs it in the format: **#ADC: <value>** where: **<value>** - pin**<adc>** voltage, expressed in mV Parameters: **<adc>** - index of pin 1 - available for UC864-E, UC864-G and UC864-E-AUTO 2 - available only for UC864-E, UC864-G and UC864-E-AUTO 3 - available only for UC864-E, UC864-G and UC864-E-AUTO **<mode>** - required action 2 - query ADC value **<dir>** - direction; its interpretation is currently not implemented 0 - no effect. Note: The command returns the last valid measure.
AT#ADC?	Read command reports all pins voltage, converted by ADC, in the format: **#ADC: <value>[<CR><LF>#ADC: <value>[…]]**
AT#ADC=?	Test command reports the supported range of values of the command parameters **<adc>**, **<mode>** and **<dir>**.

3.5.7.1.25 Digital/Analog Converter Control - #DAC

#DAC - Digital/Analog Converter Control	
AT#DAC= [<enable> [,<value>]]	Set command enables/disables the **DAC_OUT** pin. Parameters:

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#DAC - Digital/Analog Converter Control	
	<enable> - enables/disables DAC output. 0 - disables pin; it is in high impedance status (factory default) 1 - enables pin; the corresponding output is driven **<value>** - scale factor of the integrated output voltage; it must be present if **<enable>=1** 0..1023 - 10 bit precision Note: **integrated output voltage = MAX_VOLTAGE * value / 1023**
AT#DAC?	Read command reports whether the **DAC_OUT** pin is currently enabled or not, along with the integrated output voltage scale factor, in the format: **#DAC: <enable>,<value>**
AT#DAC=?	Test command reports the range for the parameters **<enable>** and **<value>**.
Example	*Enable the DAC out and set its integrated output to the 50% of the max value:* AT#DAC=1,511 OK *Disable the DAC out:* AT#DAC=0 OK
Note	With this command the DAC frequency is selected internally. D/A converter must not be used during POWERSAVING. **DAC_OUT** line must be integrated (for example with a low band pass filter) in order to obtain an analog voltage. For a more in depth description of the integration filter refer to the hardware user guide.

3.5.7.1.26 Auxiliary Voltage Output Control - #VAUX

#VAUX- Auxiliary Voltage Output Control	
AT#VAUX= [<n>,<stat>]	Set command enables/disables the Auxiliary Voltage pins output. Parameters: **<n>** - **VAUX** pin index 1 - there is currently just one **VAUX** pin **<stat>** 0 - output off 1 - output on 2 - query current value of **VAUX** pin Note: when **<stat>=2** and command is successful, it returns: **#VAUX: <value>**

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#VAUX- Auxiliary Voltage Output Control	
	where: **<value>** - power output status 0 - output off 1 - output on Note: the current setting is stored through **#VAUXSAV**
AT#VAUX?	Read command reports whether the Auxiliary Voltage pin output is currently enabled or not, in the format: **#VAUX: <value>**
AT#VAUX=?	Test command reports the supported range of values for parameters **<n>**, **<stat>**.

3.5.7.1.27 Auxiliary Voltage Output Save - #VAUXSAV

#VAUXSAV - Auxiliary Voltage Output Save	
AT#VAUXSAV	Execution command saves the actual state of **#VAUX** pin to NVM. The state will be reload at power-up.
AT#VAUXSAV=?	Test command returns the **OK** result code.

3.5.7.1.28 V24 Output Pins Configuration - #V24CFG

#V24CFG - V24 Output Pins Configuration	
AT#V24CFG=<pin>, <mode>	Set command sets the AT commands serial port (**UART**) interface output pins mode. Parameters: **<pin>** - AT commands serial port interface hardware pin: 0 - **DCD** (Data Carrier Detect) 1 - **CTS** (Clear To Send) 2 - **RI** (Ring Indicator) 3 - **DSR** (Data Set Ready) **<mode>** - AT commands serial port interface hardware pins mode: 0 - AT commands serial port mode: output pins are controlled by serial port device driver. (default) 1 - GPIO mode: output pins are directly controlled by **#V24** command only.
AT#V24CFG?	Read command returns actual mode for all the pins in the format: **#V24CFG: <pin1>,<mode1>[<CR><LF>** **#V24CFG: <pin2>,<mode2>[...]]** Where: **<pin*n*> -** AT command serial port interface HW pin **<mode*n*>** - AT commands serial port interface hardware pin mode
AT#V24CFG=?	Test command reports supported range of values for parameters **<pin>** and

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#V24CFG - V24 Output Pins Configuration	
	<mode>.

3.5.7.1.29 V24 Output Pins Control - #V24

#V24 - V24 Output Pins Control	
AT#V24=<pin> [,<state>]	Set command sets the AT commands serial port (UART) interface output pins state. Parameters: **<pin>** - AT commands serial port interface hardware pin: 0 - **DCD** (Data Carrier Detect) 1 - **CTS** (Clear To Send) 2 - **RI** (Ring Indicator) 3 - **DSR** (Data Set Ready) 4 - **DTR** (Data Terminal Ready) 5 - **RTS** (Request To Send) **<state>** - State of AT commands serial port interface output hardware pins (0, 1, 2, 3) when pin is in GPIO mode (see **#V24CFG**): 0 - Low 1 - High Note: if **<state>** is omitted the command returns state of the pin.
AT#V24?	Read command returns actual state for all the pins in the format: **#V24: <pin1>,<state1>[<CR><LF>** **#V24: <pin2>,<state2>[...]]** where **<pin*n*> -** AT command serial port interface HW pin **<state*n*>** - AT commands serial port interface hardware pin state
AT#V24=?	Test command reports supported range of values for parameters **<pin>** and **<state>**.

3.5.7.1.30 AXE Pin Reading - #AXE

#AXE - AXE Pin Reading	
AT#AXE	Execution command causes the ME to return the current state of **AXE** pin in the format: **#AXE: <state>** where: **<state>** 0 - **Low** 1 - **High**

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#AXE - AXE Pin Reading	
AT#AXE=?	Test command returns the **OK** result code.

3.5.7.1.31 Battery And Charger Status - #CBC

#CBC- Battery And Charger Status	
AT#CBC	Execution command returns the current Battery and Charger state in the format: **#CBC: <ChargerState>,<BatteryVoltage>** where: **<ChargerState>** - battery charger state 0 - charger not connected 1 - charger connected and charging 2 - charger connected and charge completed **<BatteryVoltage>** - battery voltage in millivolt: it is the real battery voltage only if charger is not connected; if the charger is connected this value depends on the charger voltage.
AT#CBC=?	Test command returns the **OK** result code.

3.5.7.1.32 GPRS Auto-Attach Property - #AUTOATT

#AUTOATT - Auto-Attach Property	
AT#AUTOATT= [<auto>]	Set command enables/disables the TE GPRS auto-attach property. Parameter: **<auto>** 0 - disables GPRS auto-attach property 1 - enables GPRS auto-attach property (factory default): after the command **#AUTOATT=1** has been issued (and at every following startup) the terminal will automatically try to attach to the GPRS service.
AT#AUTOATT?	Read command reports whether the auto-attach property is currently enabled or not, in the format: **#AUTOATT: <auto>**
AT#AUTOATT=?	Test command reports available values for parameter **<auto>**.

3.5.7.1.33 Multislot Class Control - #MSCLASS

#MSCLASS - Multislot Class Control	
AT#MSCLASS= [<class>, <autoattach>]	Set command sets the multislot class Parameters:

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#MSCLASS - Multislot Class Control	
	<class> - multislot class 1..12 - GPRS class (12 factory default) **<autoattach>** 0 - the new multislot class is enabled only at the next detach/attach or after a reboot. 1 - the new multislot class is enabled immediately, automatically forcing a detach / attach procedure.
AT#MSCLASS?	Read command reports the current value of the multislot class in the format: **#MSCLASS: <class>**
AT#MSCLASS=?	Test command reports the range of available values for both parameters **<class>** and **<autoattach>**.

3.5.7.1.34 Cell Monitor - #MONI

#MONI - Cell Monitor	
AT#MONI[= [<number>]]	Set command sets one cell out of seven, in a neighbour of the serving cell including it, from which extract GSM/WCDMA-related informations. Parameter: **<number>** <GSM network> 0..6 - it is the ordinal number of the cell, in a neighbour of the serving cell (default 0, serving cell). 7 - it is a special request to obtain GSM-related informations from the whole set of seven cells in the neighbour of the serving cell. <WCDMA network> 0 – it is the active set 1 – it is the candidate set 2 – it is the syncronized neighbour set 3 – it is the asyncronized neighbour set 4..7 – it is not available Note: issuing **AT#MONI<CR>** reports the following GSM/WCDMA-related informations for selected cell and dedicated channel (if exists). <GSM network> a) When extracting data for the serving cell and the network name is known the format is: **(GSM network)** **#MONI: <netname> BSIC:<bsic> RxQual:<qual> LAC:<lac> Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>**

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#MONI - Cell Monitor	
	(WCDMA network) **#MONI: <netmame> PSC:<psc> RSCP:<rscp> LAC:<lac>** **EcIo:<ecio> UARFCN:<uarfcn> PWR:<dBm> dBm DRX:<drx>** b) When the network name is unknown, the format is: **(GSM network)** **#MONI: Cc:<cc> Nc:<nc> BSIC:<bsic> RxQual:<qual> LAC:<lac>** **Id:<id> ARFCN:<arfcn> PWR:<dBm> dBm TA: <timadv>** **(WCDMA network)** **#MONI: Cc:<cc> Nc:<nc> PSC:<psc> RSCP:<rscp> LAC:,<lac>** **EcIo:<ecio> UARFCN:<uarfcn> PWR:<dBm> dBm DRX:<drx>** c) When extracting data for an adjacent cell, the format is: **(GSM network)** **#MONI: Adj Cell<n> [LAC:<lac> Id:<id>] ARFCN:<arfcn>** **PWR:<dBm> dBm** **(WCDMA network)** **#MONI: <adj cell> PSC:<psc> RSCP:<rscp> EcIo:<ecio>** **UARFCN:<uarfcn>** where: **<netname>** - name of network operator **<cc>** - country code **<nc>** - network operator code **<n>** - progressive number of adjacent cell **<bsic>** - base station identification code **<qual>** - quality of reception 0..7 **<lac>** - localization area code **<id>** - cell identifier **<arfcn>** - assigned radio channel **<dBm>** - received signal strength in dBm **<timadv>** = timing advance **<psc>** - primary synchronisation code **<rscp>** - Received Signal Code Power in dBm **<ecio>** - chip energy per total wideband power in dBm **<uarfcn>** - UMTS assigned radio channel **<drx>** - Discontinuous reception cycle length Note: TA: **<timadv>** is reported only for the serving cell. When the last setting done is **AT#MONI=7**, then the Read command reports the above informations for each of the cells in the neighbour of the serving cell, formatting them in a sequence of **<CR><LF>-terminated** strings. Currently, it is available in case of GSM network.
AT#MONI=?	Test command reports the maximum number of cells, in a neighbour of the serving cell excluding it, from which we can extract GSM/WCDMA-related

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#MONI - Cell Monitor	
	informations, along with the ordinal number of the current selected cell, in the format: **#MONI: (<MaxCellNo>,<CellSet>)** where: **<MaxCellNo>** - maximum number of cells, in a neighbour of the serving cell and excluding it, from which we can extract GSM-related informations. This value is always **6**. **<CellSet>** - the last setting done with command **#MONI**.
Note	The refresh time of the measures is preset to 3 sec. The timing advance value is meaningful only during calls or GPRS transfers active.

3.5.7.1.35 Serving Cell Information - #SERVINFO

#SERVINFO - Serving Cell Information	
AT#SERVINFO	Execution command reports informations about serving cell, in the format: **(GSM network)** **#SERVINFO: <B-ARFCN>,<dBM>,<NetNameAsc>,<NetCode>, ,<BSIC>,<LAC>,<TA>,<GPRS>[,[<PB-ARFCN>],[<NOM>], <RAC>,[PAT]]** (WCDMA network) #SERVINFO: <UARFCN>, <dBM>, <NetNameAsc>,<NetCode>,<PSC>,<LAC>,<DRX>,<SD>,<RSCP>, <NOM>,<RAC> where: **<B-ARFCN>** - BCCH ARFCN of the serving cell **<dBM>** - received signal strength in dBm **<NetNameAsc>** - operator name, quoted string type **<NetCode>** - country code and operator code, hexadecimal representation **<BSIC>** - Base Station Identification Code **<LAC>** - Localization Area Code **<TA>** - Time Advance: it's available only if a GSM or GPRS is running **<GPRS>** - GPRS supported in the cell 0 - not supported 1 - supported The following informations will be present only if GPRS is supported in the cell **<PB-ARFCN>** - PBCCH ARFCN of the serving cell; it'll be printed only if PBCCH is supported by the cell, otherwise the label **"hopping"** will be printed **<NOM>** - Network Operation Mode .."I"

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#SERVINFO - Serving Cell Information	
	"II" .."III" **<RAC>** - Routing Area Color Code **<PAT>** - Priority Access Threshold ..0 ..3..6 <UARFCN> - UMTS ARFCN of the serving cell <PSC> - Primary Synchronisation Code <DRX> - Discontinuous reception cycle length <SD> - Service Domain 0 – No Service 1 – CS Only 2 – PS Only 3 – CS & PS <RSCP> - Received Signal Code Power in dBm

3.5.7.1.36 Query SIM Status - #QSS

#QSS - Query SIM Status	
AT#QSS= [<mode>]	Set command enables/disables the Query SIM Status unsolicited indication in the ME. Parameter: **<mode>** - type of notification 0 - disabled (factory default); it's possible only to query the current SIM status through Read command **AT#QSS?** 1 - enabled; the ME informs at every SIM status change through the following unsolicited indication: **#QSS: <status>** where: **<status>** - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED 2 - enabled; the ME informs at every SIM status change through the following unsolicited indication: **#QSS: <status>** where: **<status>** - current SIM status 0 - SIM NOT INSERTED 1 - SIM INSERTED 2 - SIM INSERTED and PIN UNLOCKED

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#QSS - Query SIM Status	
	3 - SIM INSERTED and READY (SMS and Phonebook access are possible). Note: issuing **AT#QSS<CR>** is the same as issuing the Read command. Note: issuing **AT#QSS=<CR>** is the same as issuing the command **AT#QSS=0<CR>**.
AT#QSS?	Read command reports whether the unsolicited indication **#QSS** is currently enabled or not, along with the SIM status, in the format: **#QSS: <mode>,<status>** (**<mode>** and **<status>** are described above)
AT#QSS=?	Test command returns the supported range of values for parameter **<mode>**.
Example	AT#QSS? #QSS:0,1 OK

3.5.7.1.37 Dialling Mode - #DIALMODE

#DIALMODE - Dialling Mode	
AT#DIALMODE= [<mode>]	Set command sets dialling modality. Parameter: **<mode>** 0 - (voice call only) **OK** result code is received as soon as it starts remotely ringing (factory default) 1 - (voice call only) **OK** result code is received only after the called party answers. Any character typed aborts the call and **OK** result code is received. 2 - (voice call and data call) the following custom result codes are received, monitoring step by step the call status: **DIALING** (MO in progress) **RINGING** (remote ring) **CONNECTED** (remote call accepted) **RELEASED** (after **ATH**) **DISCONNECTED** (remote hang-up) Note: The setting is saved in NVM and available on following reboot.
AT#DIALMODE?	Read command returns current **ATD** dialing mode in the format: **#DIALMODE: <mode>**
AT#DIALMODE=?	Test command returns the range of values for parameter **<mode>**

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3.5.7.1.38 Automatic Call - #ACAL

#ACAL - Automatic Call	
AT#ACAL= [<mode>]	Set command enables/disables the automatic call function. Parameter: **<mode>** 0 - disables the automatic call function (factory default) 1 - enables the automatic call function. If enabled (and **&D2** has been issued), the transition **OFF/ON** of **DTR** causes an automatic call to the first number (position 0) stored in the internal phonebook. Note: type of call depends on the last issue of command **+FCLASS**.
AT#ACAL?	Read command reports whether the automatic call function is currently enabled or not, in the format: **#ACAL: <mode>** where **<mode>** 0 - automatic call function disabled 1 - automatic call function from internal phonebook enabled 2 - automatic call function from “SM” phonebook enabled (by AT#ACALEXT) 3 - automatic call function from “ME” phonebook enabled (by AT#ACALEXT)
AT#ACAL=?	Test command returns the supported range of values for parameter **<mode>**.
Note	See **&Z** to write and **&N** to read the number on module internal phonebook.

3.5.7.1.39 Extended Automatic Call - #ACALEXT

#ACALEXT - Extended Automatic Call	
AT#ACALEXT= <mode>,<index>	Set command enables/disables the extended automatic call function. Parameters: **<mode>** 0 - disables the automatic call function (factory default) 1 - enables the automatic call function from internal phonebook. 2 - enables the automatic call function from “SM” phonebook. 3 - enables the automatic call function from “ME” phonebook. **<index>** - it indicates a position in the currently selected phonebook. If the extended automatic call function is enabled and **&D2** has been issued, the transition **OFF/ON** of **DTR** causes an automatic call to the number stored in position **<index>** in the selected phonebook.

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#ACALEXT - Extended Automatic Call	
	Note: type of call depends on the last issue of command **+FCLASS**.
AT#ACALEXT?	Read command reports either whether the automatic call function is currently enabled or not, and the last **<index>** setting in the format: **#ACALEXT: <mode>,<index>**
AT#ACALEXT=?	The range of available positions in a phonebook depends on the selected phonebook. This is the reason why the test command returns three ranges of values: the first for parameter **<mode>,** the second for parameter **<index>** when internal phonebook is chosen, the third for parameter **<index>** when "SM" is the chosen phonebook, the fourth for parameter **<index>** when "ME" is the chosen phonebook.
Note	Issuing **#ACALEXT** causes the **#ACAL <mode>** to be changed. Issuing **AT#ACAL=1** causes the **#ACALEXT <index>** to be set to default. It is recommended to NOT use contemporaneously either **#ACALEXT** and **#ACAL**
Note	See **&Z** to write and **&N** to read the number on module internal phonebook.

3.5.7.1.40 Extended Call Monitoring - #ECAM

#ECAM - Extended Call Monitoring	
AT#ECAM=[<onoff>]	This command enables/disables the call monitoring function in the ME. Parameter: **<onoff>** 0 - disables call monitoring function (factory default) 1 - enables call monitoring function; the ME informs about call events, such as incoming call, connected, hang up etc. using the following unsolicited indication: **#ECAM: <ccid>,<ccstatus>,<calltype>,,,[<number>,<type>]** where **<ccid>** - call ID **<ccstatus>** - call status 0 - idle 1 - calling (MO) 2 - connecting (MO) 3 - active 4 - hold 5 - waiting (MT) 6 - alerting (MT) 7 – busy 8 – retrieved 9 – CNAP (Calling Name Presentation) information (MT) **<calltype>** - call type

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#ECAM - Extended Call Monitoring	
	1 - voice 2 - data **<number>** - called number (valid only for **<ccstatus>=1**) **<type>** - type of **<number>** 129 - national number 145 - international number Note: the unsolicited indication is sent along with usual codes (**OK**, **NO CARRIER**, **BUSY**...).
AT#ECAM?	Read command reports whether the extended call monitoring function is currently enabled or not, in the format: **#ECAM: <onoff>**
AT#ECAM=?	Test command returns the list of supported values for **<onoff>**

3.5.7.1.41 SMS Overflow - #SMOV

#SMOV - SMS Overflow	
AT#SMOV=[<mode>]	Set command enables/disables the SMS overflow signalling function. Parameter: **<mode>** 0 - disables SMS overflow signaling function (factory default) 1 - enables SMS overflow signalling function; when the maximum storage capacity has reached, the following network initiated notification is send: **#SMOV: <memo>**
AT#SMOV?	Read command reports whether the SMS overflow signalling function is currently enabled or not, in the format: **#SMOV: <mode>**
AT#SMOV=?	Test command returns the supported range of values of parameter **<mode>**.
Example	AT#SMOV? #SMOV: 0 OK

3.5.7.1.42 Mailbox Numbers - #

#MBN - Mailbox Numbers	
AT#MBN	Execution command returns the mailbox numbers stored on SIM, if this service is provided by the SIM. The response format is: **[#MBN: <index>,<number>,<type>[,<text>][,mboxtype][<CR><LF>**

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#MBN - Mailbox Numbers	
	#MBN: <index>,<number>,<type>[,<text>][,mboxtype][...]]] where: **<index>** - record number **<number>** - string type mailbox number in the format **<type>** **<type>** - type of mailbox number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "**+**") **<text>** - the alphanumeric text associated to the number; used character set should be the one selected with command **+CSCS** **<mboxtype>** - the message waiting group type of the mailbox, if available: "VOICE" - voice "FAX" - fax "EMAIL" - electronic mail "OTHER" - other Note: if all queried locations are empty (but available), no information text lines will be returned.
AT#MBN=?	Test command returns the **OK** result code.

3.5.7.1.43 Message Waiting Indication - #MWI

#MWI - Message Waiting Indication	
AT#MWI=<enable>	Set command enables/disables the presentation of the **message waiting indicator** URC. Parameter: **<enable>** 0 - disable the presentation of the **#MWI** URC 1 - enable the presentation of the **#MWI** URC each time a new message waiting indicator is received from the network and, at startup, the presentation of the status of the **message waiting indicators**, as they are currently stored on SIM.. The URC format is: **#MWI: <status>,<indicator>[,<count>]** where: **<status>** 0 - clear: it has been deleted one of the messages related to the indicator **<indicator>**. 1 - set: there's a new waiting message related to the indicator **<indicator>** **<indicator>** 1 - either Line 1 (CPHS context) or Voice (3GPP context) 2 - Line 2 (CPHS context only)

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#MWI - Message Waiting Indication	
	3 - Fax 4 - E-mail 5 - Other **<count>** - message counter: network information reporting the number of pending messages related to the message waiting indicator **<indicator>**. The presentation at startup of the **message waiting indicators** status, as they are currently stored on SIM, is as follows: **#MWI: <status>[,<indicator>[,<count>][<CR><LF>** **#MWI: <status>,<indicator>[,<count>][...]]]** where: **<status>** 0 - no waiting message indicator is currently set: if this the case no other information is reported 1 - there are waiting messages related to the message waiting indicator **<indicator>**. **<indicator>** 1 - either Line 1 (CPHS context) or Voice (3GPP context) 2 - Line 2 (CPHS context) 3 - Fax 4 - E-mail 5 - Other **<count>** - message counter: number of pending messages related to the message waiting indicator **<indicator>** as it is stored on SIM.
AT#MWI?	Read command reports wheter the presentation of the **message waiting indicator** URC is currently enabled or not, and the current status of the **message waiting indicators** as they are currently stored on SIM. The format is: **#MWI: <enable>,<status>[,<indicator>[,<count>][<CR><LF>** **#MWI: <enable>,<status>,<indicator>[,<count>][...]]]**
AT#MWI=?	Test command returns the range of available values for parameter **<enable>**

3.5.7.1.44 Audio Codec - #CODEC

#CODEC - Audio Codec

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#CODEC - Audio Codec	
AT#CODEC=[<codec>]	Set command sets the audio codec mode. Parameter: **<codec>** 0 - all the codec modes are enabled (factory default) 1..31 - sum of integers each representing a specific codec mode: 1 - **FR**, full rate mode enabled 2 - **EFR**, enhanced full rate mode enabled 4 - **HR**, half rate mode enabled 8 - **AMR-FR**, AMR full rate mode enabled 16 - **AMR-HR**, AMR half rate mode enabled Note: the setting 0 is equivalent to the setting 31. Note: The codec setting is saved in the profile parameters.
AT#CODEC?	Read command returns current audio codec mode in the format: **#CODEC: <codec>**
AT#CODEC=?	Test command returns the range of available values for parameter **<codec>**
Example	AT#CODEC=14 OK *sets the codec modes HR (4), EFR (2) and AMR-FR (8)*

3.5.7.1.45 Handsfree Echo Canceller - #SHFEC

#SHFEC - Handsfree Echo Canceller	
AT#SHFEC=[<mode>]	Set command enables/disables the echo canceller function on audio handsfree output. Parameter: **<mode>** 0 - disables echo canceller for handsfree mode (factory default) 1 - enables echo canceller for handsfree mode Note: This setting returns to default after power off.
AT#SHFEC?	Read command reports whether the echo canceller function on audio handsfree output is currently enabled or not, in the format: **#SHFEC: <mode>**
AT#SHFEC=?	Test command returns the supported range of values of parameter **<mode>**.

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3.5.7.1.46 Handsfree Microphone Gain - #HFMICG

#HFMICG - Handsfree Microphone Gain	
AT#HFMICG= [<level>]	Set command sets the handsfree microphone input gain Parameter: **<level>**: handsfree microphone input gain 0..7 - handsfree microphone gain (+6dB/step)
AT#HFMICG?	Read command returns the current handsfree microphone input gain, in the format: **#HFMICG: <level>**
AT#HFMICG=?	Test command returns the supported range of values of parameter **<level>**.

3.5.7.1.47 Handset Microphone Gain - #HSMICG

#HSMICG - Handset Microphone Gain	
AT#HSMICG= [<level>]	Set command sets the handset microphone input gain Parameter: **<level>**: handset microphone input gain 0..7 - handset microphone gain (+6dB/step)
AT#HSMICG?	Read command returns the current handset microphone input gain, in the format: **#HSMICG: <level>**
AT#HSMICG=?	Test command returns the supported range of values of parameter **<level>**.

3.5.7.1.48 Set Headset Sidetone - #SHFSD

#SHFSD - Set Headset Sidetone	
AT#SHFSD= [<mode>]	Set command enables/disables the sidetone on headset audio output. Parameter: **<mode>** 0 - disables the headset sidetone (factory default) 1 - enables the headset sidetone. Note: This setting returns to default after power off.
AT#SHFSD?	Read command reports whether the headset sidetone is currently enabled or not, in the format:

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#SHFSD - Set Headset Sidetone	
	#SHFSD: <mode>
AT#SHFSD=?	Test command returns the supported range of values of parameter **<mode>**.

3.5.7.1.49 Speaker Mute Control - #SPKMUT

#SPKMUT - Speaker Mute Control	
AT#SPKMUT=<n>	Set command enables/disables the global muting of the speaker audio line, for every audio output (ring, incoming sms, voice, Network coverage) Parameter: **<n>** 0 - mute off, speaker active (factory default) 1 - mute on, speaker muted. Note: this command mutes/activates both speaker audio paths, internal speaker and external speaker.
AT#SPKMUT?	Read command reports whether the muting of the speaker audio line during a voice call is enabled or not, in the format: **#SPKMUT: <n>**
AT#SPKMUT=?	Test command reports the supported values for **<n>** parameter.

3.5.7.1.50 Handsfree Receiver Gain - #HFRECG

#HFRECG - Handsfree Receiver Gain	
AT#HFRECG= <level>	Set command sets the handsfree analogue output gain Parameter: **<level>**: handsfree analogue output gain 0..6 - handsfree analogue output (-3dB/step) *Note: This parameter is saved in NVM issuing AT&W command*.
AT#HFRECG?	Read command returns the current handsfree analog output gain, in the format: **#HFRECG: <level>**
AT#HFRECG =?	Test command returns the supported range of values of parameter **<level>**.

3.5.7.1.51 Handset Receiver Gain - #HSRECG

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#HSRECG - Handset Receiver Gain	
AT#HSRECG= <level>	Set command sets the handset analogue output gain Parameter: **<level>**: handset analogue output gain 0..6 - handset analogue output (-3dB/step) *Note: This parameter is saved in NVM issuing AT&W command*.
AT#HSRECG?	Read command returns the current handset analog output gain, in the format: **#HSRECG: <level>**
AT#HSRECG =?	Test command returns the supported range of values of parameter **<level>**.

3.5.7.1.52 Audio Profile Factory Configuration - #PRST

#PRST - Audio Profile Factory Configuration	
AT#PRST	Execution command resets the actual audio parameters in the NVM of the device to the default set. It is not allowed if active audio profile is 0. The audio parameters to reset are: - microphone line gain - earpiece line gain - side tone gain - LMS adaptation speed (step size) - LMS filter length (number of coefficients) - speaker to micro signal power relation - noise reduction max attenuation - noise reduction weighting factor (band 300-500Hz) - noise reduction weighting factor (band 500-4000Hz) - AGC Additional attenuation - AGC minimal attenuation - AGC maximal attenuation
AT#PRST=?	Test command returns the **OK** result code.
Example	AT#PRST 0K *Current audio profile is reset*

3.5.7.1.53 Audio Profile Configuration Save - #PSAV

#PSAV - Audio Profile Configuration Save	
AT#PSAV	Execution command saves the actual audio parameters in the NVM of the device.

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#PSAV - Audio Profile Configuration Save	
	It is not allowed if active audio profile is 0. The audio parameters to store are: - microphone line gain - earpiece line gain - side tone gain - LMS adaptation speed - LMS filter length (number of coefficients) - speaker to micro signal power relation - noise reduction max attenuation - noise reduction weighting factor (band 300-500Hz) - noise reduction weighting factor (band 500-4000Hz) - AGC Additional attenuation - AGC minimal attenuation - AGC maximal attenuation
AT#PSAV=?	Test command returns the **OK** result code.
Example	AT#PSAV OK *Current audio profile is saved in NVM*

3.5.7.1.54 Audio Profile Selection - #PSEL

#PSEL - Audio Profile Selection	
AT#PSEL=<prof>	Set command selects the active audio profile Parameter: **<prof>**: current profile 0 - standard profile 1..3 - extended profile, modifiable. *Note: This parameter is saved in NVM issuing AT&W command*.
AT#PSEL?	The read command returns the active profile in the format: **#PSEL:<prof>**
AT#PSEL=?	Test command returns the supported range of values of parameter **<prof>**.

3.5.7.1.55 Audio Profile Setting - #PSET

#PSET - Audio Profile Setting	
AT#PSET=<scal _in>	Set command sets parameters for the active audio profile. It is not allowed if active audio profile is 0.

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#PSET - Audio Profile Setting	
[,<scal _out> **[,<side_tone_atten>** **[,<adaption_speed>** **[,<filter_length>** **[,<rxtxrelation>** **[,<nr_atten>** **[,<nr_w_0>** **[,<nr_w_1>** **[,<add_atten>** **[,<min_atten>** **[,<max_atten>** **]]]]]]]]]]]]]]]	Parameters: **<scal_in>** - microphone line digital gain **<scal_out>** - earpiece line digital gain **<side_tone_atten>** - side tone attenuation **<adaption_speed>** - LMS adaptation speed **<filter_length>** - LMS filter length (number of coefficients) **<rxtxrelation>** - speaker to micro signal power relation**(unused)** **<nr_ atten >** - noise reduction max attenuation**(unused)** **<nr_w_0>** - noise reduction weighting factor (band 300-500Hz) **(unused)** **<nr_w_1>** - noise reduction weighting factor (band 500-4000Hz) **(unused)** **<add_atten>** - AGC Additional attenuation**(unused)** **<min_atten>** - AGC minimal attenuation**(unused)** **<max_atten>** - AGC maximal attenuation**(unused)**
AT#PSET?	Read command returns the parameters for the active profile in the format: **#PSET:<scal_in>,<scal_out>,<side_tone_atten>,<adaption_speed>, <filter_length>,<rxtxrelation>,<nr_atten>,<nr_w_0>,<nr_w_1>, <add_atten>,<min_atten>,<max_atten>** It is not allowed if active audio profile is 0.
AT#PSET=?	Test command returns the supported range of values for the audio parameters.

3.5.7.1.56 Handsfree Automatic Gain Control - #SHFAGC

#SHFAGC - Handsfree Automatic Gain Control	
AT# SHFAGC = <mode>	Set command enables/disables the automatic gain control function on audio handsfree input. Parameter: **<mode>** 0 - disables automatic gain control for handsfree mode (default) 1 - enables automatic gain control for handsfree mode *Note: This parameter is saved in NVM issuing AT&W command*.
AT# SHFAGC?	Read command reports whether the automatic gain control function on audio handsfree input is currently enabled or not, in the format: **#SHFAGC: <mode>**
AT# SHFAGC =?	Test command returns the supported range of values of parameter **<mode>**.

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3.5.7.1.57 Handsfree Noise Reduction - #SHFNR

# SHFNR - Handsfree Noise Reduction	
AT#SHFNR = <mode>	Set command enables/disables the noise reduction function on audio handsfree input. Parameter: **<mode>** 0 - disables noise reduction for handsfree mode (default) 1 - enables noise reduction for handsfree mode *Note: This parameter is saved in NVM issuing AT&W command*.
AT#SHFNR?	Read command reports whether the noise reduction function on audio handsfree input is currently enabled or not, in the format: **#SHFNR: <mode>**
AT#SHFNR =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.7.1.58 Handset Automatic Gain Control - #SHSAGC

#SHSAGC - Handset Automatic Gain Control	
AT#SHSAGC = <mode>	Set command enables/disables the automatic gain control function on audio handset input. Parameter: **<mode>** 0 - disables automatic gain control for handset mode (default) 1 - enables automatic gain control for handset mode *Note: This parameter is saved in NVM issuing AT&W command*.
AT#SHSAGC?	Read command reports whether the automatic gain control function on audio handset input is currently enabled or not, in the format: **#SHSAGC: <mode>**
AT#SHSAGC =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.7.1.59 Handset Echo Canceller - #SHSEC

#SHSEC - Handset Echo Canceller	
AT#SHSEC = <mode>	Set command enables/disables the echo canceller function on audio handset output. Parameter: **<mode>**

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#SHSEC - Handset Echo Canceller	
	0 - disables echo canceller for handset mode (default) 1 - enables echo canceller for handset mode *Note: This parameter is saved in NVM issuing AT&W command*.
AT#SHSEC?	Read command reports whether the echo canceller function on audio handset output is currently enabled or not, in the format: **#SHSEC: <mode>**
AT#SHSEC =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.7.1.60 Handset Noise Reduction - #SHSNR

#SHSNR - Handset Noise Reduction	
AT# SHSNR = <mode>	Set command enables/disables the noise reduction function on audio handset input. Parameter: **<mode>** 0 - disables noise reduction for handset mode (default) 1 - enables noise reduction for handset mode *Note: This parameter is saved in NVM issuing AT&W command*.
AT# SHSNR?	Read command reports whether the noise reduction function on audio handset input is currently enabled or not, in the format: **# SHSNR: <mode>**
AT# SHSNR =?	Test command returns the supported range of values of parameter **<mode>**.

3.5.7.1.61 Set Handset Sidetone - #SHSSD

#SHSSD - Set Handset Sidetone	
AT#SHSSD= <mode>	Set command enables/disables the sidetone on handset audio output. Parameter: **<mode>** 0 - disables the handset sidetone 1 - enables the handset sidetone (factory default) *Note: This parameter is saved in NVM issuing AT&W command*.
AT#SHSSD?	Read command reports whether the headset sidetone is currently enabled or not, in the format:

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#SHSSD - Set Handset Sidetone	
	#SHSSD: <mode>
AT#SHSSD=?	Test command returns the supported range of values of parameter **<mode>**.

3.5.7.1.62 Repeat Last Command - #/

#/ - Repeat Last Command	
AT#/	Execute command is used to execute again the last received command.

3.5.7.1.63 Network Timezone - #NITZ

#NITZ - Network Timezone	
AT#NITZ= **[<val>** **[,<mode>]]**	Set command enables/disables automatic date/time updating, Full (or Short) Network Name applying and Network Timezone unsolicited indication. Date and time information and Full (or Short) Network Name information may be sent by the network after GSM/WCDMA registration or after GPRS attach. Parameters: **<val>** 0 - disables automatic set (factory default) 1..3 – value obtained as sum of the following values: 1 - enables automatic date/time updating 2 - enables Full (or Short) Network Name applying **<mode>** 0 - disables unsolicited message (factory default) 1 - enables unsolicited message; after date and time updating the following unsolicited indication is sent: **#NITZ: "yy/MM/dd,hh:mm:ss"** where: **yy** - year **MM** - month (in digits) **dd** - day **hh** - hour **mm** - minute **ss** - second
AT#NITZ?	Read command reports whether automatic date/time updating and Full (or Short) Network Name applying are is currently enabled or not, and whether Network Timezone unsolicited indication is enabled or not, in the format: **#NITZ: <val>,<mode>**

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#NITZ - Network Timezone	
AT#NITZ=?	Test command returns supported values of parameters **<val>** and **<mode>**.

3.5.7.1.64 Select Band - #BND

#BND - Select Band	
AT#BND= <GSM band>, <WCDMA band>	Set command selects the current band. Parameter **<GSM band>**: 0 - GSM 900MHz + DCS 1800MHz 1 - GSM 900MHz + PCS 1900MHz 2 - GMS 850MHz + PCS 1800MHz (available only on quadri-band modules) 3 - GMS 850MHz + PCS 1900MHz (available only on quadri-band modules) **<WCDMA band>**: 0 – WCDMA 2100MHz 1 – WCDMA 1900MHz(UC864-G only) 2 – WCDMA 850MHz(UC864-G only) **3 – WCDMA 2100MHz / WCDMA 1900MHz / WCDMA 850MHz(UC864-G only)** Note: This setting is maintained even after power off.
AT#BND?	Read command returns the current selected band in the format: **#BND: <GSM band>, <WCDMA band>**
AT#BND=?	Test command returns the supported range of values of parameters **<GSM band>** and **<WCDMA band>**. Note: the range of values differs between triband modules and quadric-band modules
Example	AT#BND? #BND: 3,0 OK AT#BND=? #BND: (0-3),(0-3) OK

3.5.7.1.65 Automatic Band Selection - #AUTOBND

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#AUTOBND - Automatic Band Selection	
AT#AUTOBND=[<value>]	Set command enables/disables the automatic band selection at power-on. Parameter: **<value>**: 0 - disables automatic band selection at power-on (factory default) 1 - enables automatic band selection at power-on; **+COPS=0** is necessary condition to effectively have automatic band selection at next power-on; the automatic band selection stops as soon as a GSM cell is found. Note: if automatic band selection is enabled the band changes every about 90 seconds through available bands until a GSM cell is found.
AT#AUTOBND?	Read command returns whether the automatic band selection is enabled or not in the form: **#AUTOBND: <value>**
AT#AUTOBND=?	Test command returns the range of supported values for parameter **<value>**.

3.5.7.1.66 Skip Escape Sequence - #SKIPESC

#SKIPESC - Skip Escape Sequence	
AT#SKIPESC=[<mode>]	Set command enables/disables skipping the escape sequence **+++** while transmitting during a data connection. Parameter: **<mode>** 0 - doesn't skip the escape sequence; its transmission is enabled (factory default). 1 - skips the escape sequence; its transmission is not enabled. Note: in case of an FTP connection, the escape sequence is not transmitted, regardless of the command setting.
AT#SKIPESC?	Read command reports whether escape sequence skipping is currently enabled or not, in the format: **#SKIPESC: <mode>**
AT#SKIPESC=?	Test command reports supported range of values for parameter **<mode>**.

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3.5.7.1.67 Escape Sequence Guard Time - #E2ESC

#E2ESC - Escape Sequence Guard Time	
AT#E2ESC=[<gt>]	Set command sets a guard time in seconds for the escape sequence in GPRS to be considered a valid one (and return to on-line command mode). Parameter: **<gt>** 0 - no guard time (factory default) 1..10 - guard time in seconds Note: if the Escape Sequence Guard Time is set to a value different from zero, it overrides the one set with **S12**.
AT#E2ESC?	Read command returns current value of the escape sequence guard time, in the format: **#E2ESC: <gt>**
AT#E2ESC=?	Test command returns the **OK** result code.

3.5.7.1.68 PPP-GPRS Connection Authentication Type - #GAUTH

#GAUTH - PPP-GPRS Connection Authentication Type	
AT#GAUTH=[<type>]	Set command sets the PPP-GPRS connection authentication type. Parameter **<type>** 3 – AUTO authentication (PAP and CHAP , factory default) Note: for PPP passive mode , <type> is fixed to AUTO.
AT#GAUTH?	Read command reports the current PPP-GPRS connection authentication type, in the format: **#GAUTH: <type>**
AT#GAUTH=?	Test command returns the range of supported values for parameter **<type>**.

3.5.7.1.69 RTC Status - #RTCSTAT

#RTCSTAT - RTC Status	
AT#RTCSTAT=[<status>]	Set command resets the RTC status flag. Parameter: **<status>** 0 - Set RTC Status to **RTC HW OK**

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#RTCSTAT - RTC Status	
	Note: the initial value of RTC status flag is **RTC HW Error** and it doesn't change until a command **AT#RTCSTAT=0** is issued. Note: if a power failure occurs and the buffer battery is down the RTC status flag is set to **1**. It doesn't change until command **AT#RTCSTAT=0** is issued.
AT#RTCSTAT?	Read command reports the current value of RTC status flag, in the format: **#RTCSTAT: <status>**
AT#RTCSTAT=?	Test command returns the range of supported values for parameter **<status>**

3.5.7.1.70 GSM Antenna Detection - #GSMAD

#GSMAD - GSM Antenna Detection	
AT#GSMAD=<mod>,[<urcmode>[,<interval>[,<detGPIO>[,<repGPIO>]]]]	Set command sets the behaviour of antenna detection algorithm Parameters: **<mod>** 0 - detection algorithm not active 1 - detection algorithm active; detection is started every **<interval>** period, using **<detGPIO>** for detection. 2 - triggers the new measurement of the antenna presence, reporting the result in the format: **#GSMAD: <presence>** where: **<presence>** 0 - antenna connected. 1 - antenna connector short circuited to ground. 2 - antenna connector short circuited to power. 3 - antenna not detected (open). **<urcmode>** - URC presentation mode. It has meaning only if **<mod>** is 1. 0 - it disables the presentation of the antenna detection URC 1 - it enables the presentation of the antenna detection URC, whenever the antenna detection algorithm detects a change in the antenna status; the unsolicited message is in the format: **#GSMAD: <presence>** where: **<presence>** is as before

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	<interval> - duration in seconds of the interval between two consecutive antenna detection algorithm runs (default is 120). It has meaning only if **<mod>** is 1. 1..3600 - seconds **<detGPIO>** - defines which GPIO shall be used as input by the Antenna Detection algorithm (default 13).. *Valid range* is “any input pin number” (see “Hardware User Guide”). **<repGPIO>** - defines which GPIO shall be used by the Antenna Detection algorithm to report antenna condition. Value 0 means that no report is made using GPIO (default 0). It has meaning only if **<mod>** is 1. 0 - no report is made using GPIO *Valid range* is “any output pin number” (see “Hardware User Guide”). Note: last **<urcmode>** settings are saved as extended profile parameters. Note: GPIO is set to LOW when antenna is connected. Set to HIGH otherwise Note: **#GSMAD** parameters, excluding **<urcmode>**, are saved in NVM.
AT#GSMAD=?	Test command reports the supported range of values for parameters **<mod>, <urcmode>, <interval>, <detGPIO>** and **<repGPIO>**.
AT#GSMAD?	Read command returns the current parameter settings for **#GSMAD** command in the format: **#GSMAD: <mod>,<urcmode>,<interval>,<detGPIO>,<repGPIO>**

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3.5.7.2 Multisocket AT Commands

3.5.7.2.1 Socket Status - #SS

#SS - Socket Status	
AT#SS	Execution command reports the current status of the sockets in the format: **#SS: <connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort>** **[<CR><LF><connId>,<state>,<locIP>,<locPort>,<remIP>,<remPort>** **[…]]** where: **<connId>** - socket connection identifier 1..6 **<state>** - actual state of the socket: 0 - Socket Closed. 1 - Socket with an active data transfer connection. 2 - Socket suspended. 3 - Socket suspended with pending data. 4 - Socket listening. 5 - Socket with an incoming connection. Waiting for the user accept or shutdown command. **<locIP>** - IP address associated by the context activation to the socket. **<locPort>** - two meanings: - the listening port if we put the socket in listen mode. - the local port for the connection if we use the socket to connect to a remote machine. **<remIP>** - when we are connected to a remote machine this is the remote IP address. **<remPort>** - it is the port we are connected to on the remote machine.
AT#SS=?	Test command returns the **OK** result code.

3.5.7.2.2 Context Activation - #SGACT

#SGACT - Context Activation	
AT#SGACT=<cid>,<stat>[,<userId>,<pwd>]	Execution command is used to activate or deactivate the specified PDP context. Parameters: **<cid>** - PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition **<stat>** 0 - deactivate the context 1 - activate the context

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#SGACT - Context Activation	
	<userId> - string type, used only if the context requires it **<pwd>** - string type, used only if the context requires it
AT#SGACT?	Returns the state of all the five contexts, in the format: **#SGACT: <cid1>,<Stat1><CR><LF>** **…** **#SGACT: <cid5>,<Stat5>** where: **<cid*n*>** - as **<cid>** before **<stat*n*>** - context status 0 - context deactivated 1 - context activated
AT#SGACT=?	Reports the range for the parameters **<cid>** and **<stat>**

3.5.7.2.3 Socket Shutdown - #SH

#SH - Socket Shutdown	
AT#SH=<connId>	This command is used to close a socket. Parameter: **<connId>** - socket connection identifier 1..6 Note: a socket connection can be closed only when it is in suspended mode (with pending data too). Trying to close an active socket connection will produce an error.
AT#SH=?	Test command returns the **OK** result code.

3.5.7.2.4 Socket Configuration - #SCFG

#SCFG - Socket Configuration	
AT#SCFG=<connId>,<cid>,<pktSz>,<maxTo>,<connTo>,<txTo>	Set command sets the socket configuration parameters. Parameters: **<connId>** - socket connection identifier 1..6 **<cid>** - PDP context identifier 1..5 - numeric parameter which specifies a particular PDP context definition **<pktSz>** - packet size to be used by the TCP/UDP/IP stack for data sending. 0 - automatically chosen by the device.

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#SCFG - Socket Configuration	
	1..1500 - packet size in bytes. **<maxTo>** - exchange timeout(or socket inactivity time); if there's no data exchange within this timeout period the connection is closed 0 - no timeout *n* - timeout value in seconds (default 90 s.) **<connTo>** - connection timeout; if we can't establish a connection to the remote within this timeout period, an error is raised. 0 - no timeout *n* - timeout value in hundreds of milliseconds (default 600) **<txTo>** - data sending timeout; data are sent even if they're less than max packet size , after this period. 0 - no timeout *n* - timeout value in hundreds of milliseconds (default 50) Note: these values are automatically saved in NVM.
AT#SCFG?	Read command returns the current socket configuration parameters values for all the six sockets, in the format: **#SCFG: <connId1>,<cid1>,<pktsz1>,<maxTo1>,<connTo1>,<txTo1>** **<CR><LF>** **. . .** **#SCFG: <connId6>,<cid6>,<pktsz6>,<maxTo6>,<connTo6>,<txTo6>** **<CR><LF>**
AT#SCFG=?	Test command returns the range of supported values for all the subparameters.

Example	`at#scfg?`
	`#SCFG: 1,1,300,90,600,50`
	`#SCFG: 2,2,300,90,600,50`
	`#SCFG: 3,2,250,90,600,50`
	`#SCFG: 4,1,300,90,600,50`
	`#SCFG: 5,1,300,90,600,50`
	`#SCFG: 6,1,300,90,600,50`
	
	OK

3.5.7.2.5 Socket Dial - #SD

#SD - Socket Dial	
AT#SD=<connId>,<txProt>,<rPort>,<IPaddr>[,<lingerT>[,<lPort>[,<connMode]]]	Execution command opens a remote connection via socket. Parameters: **<connId>** - socket connection identifier 1..6

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#SD - Socket Dial	
	<txProt> - transmission protocol 0 - TCP 1 - UDP **<rPort>** - remote host port to contact 0..65535 **<IPaddr>** - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: “xxx.xxx.xxx.xxx” - any host name to be solved with a DNS query **<lingerT>** - linger time 0 - immediate closure after remote closure 255 - local host closes only after an escape sequence (+++) **<lPort>** - UDP connections local port 0..65535 **<connMode>** - UDP connections local port 0,1 – connection modes (unused) Note: **<lingerT>** parameter is valid for TCP connections only; for UDP shall be left unused. Note: **<lPort>** parameter is valid for UDP connections only; for TCP shall be left unused. Note: if the command is successful we enter in **online data mode** and we see the intermediate result code **CONNECT**. After the **CONNECT** we can suspend the socket using the escape sequence (**+++**): the module moves back to **command mode** and we receive the final result code **OK** after the suspension and, if there are data pending on the socket, an unsolicited result code: **+SRING: <connId>** Afterwards we can continue the normal AT session. The suspended connection can be resumed in every moment (unless we wait until a timeout disconnection) by using the **#SO** command with the corresponding **<connId>**.
AT#SD=?	Test command reports the range of values for all the parameters.

3.5.7.2.6 Socket Accept - #SA

#SA - Socket Accept	
AT#SA=<connId>	Execution command accepts an incoming socket connection after an URC **+SRING: <connId>**. Parameter: **<connId>** - socket connection identifier

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#SA - Socket Accept	
	1..6
AT#SA=?	Test command reports the range of values for **<connId>** parameter.

3.5.7.2.7 Socket Restore - #SO

#SO - Socket Restore	
AT#SO=<connId>	Execution command resumes socket connection which has been suspended by the escape sequence. Parameter: **<connId>** - socket connection identifier 1..6
AT#SO=?	Test command reports the range of values for **<connId>** parameter.

3.5.7.2.8 Socket Listen - #SL

#SL - Socket Listen	
AT#SL=<connId>, <listenState>, <listenPort> [,<lingerT>]	This command opens/closes a socket listening for an incoming connection on a specified port. Parameters: **<connId>** - socket connection identifier 1..6 **<listenState>** - 0 - closes socket listening 1 - starts socket listening **<listenPort>** - local listening port 0..65535 **<lingerT>** - linger time 0 - immediate closure after remote closure 255 - local host closes only after an escape sequence (**+++**) Note: if successful, commands returns a final result code **OK** . Then, when there's an incoming connection on the local port and if the sender is not filtered by internal firewall (see **#FRWL**), an URC is received: **+SRING : <connId>** Afterwards we can use **#SA** to accept the connection or **#SH** to refuse it. If the socket is closed by the network the following URC is received: **#SKTL: ABORTED**
AT#SL?	Read command returns all the actual listening sockets.
AT#SL=?	Test command returns the range of supported values for all the

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#SL - Socket Listen	
	subparameters.
Example	at#scfg? #SCFG: 1,1,300,90,600,50 #SCFG: 2,2,300,90,600,50 #SCFG: 3,2,250,90,600,50 #SCFG: 4,1,300,90,600,50 #SCFG: 5,1,300,90,600,50 #SCFG: 6,1,300,90,600,50 OK

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3.5.7.3 FTP AT Commands

3.5.7.3.1 FTP Time-Out - #FTPTO

#FTPTO - FTP Time-Out	
AT#FTPTO=[<tout>]	Set command sets the time-out used when opening either the FTP control channel or the FTP traffic channel. Parameter: **<tout>** - time-out in 100 ms units 100..5000 - hundreds of ms (factory default is 100) Note: The parameter is not saved in NVM.
AT#FTPTO?	Read command returns the current FTP operations time-out, in the format: **#FTPTO: <tout>**
AT#FTPTO=?	Test command returns the range of supported values for parameter **<tout>**

3.5.7.3.2 FTP Open - #FTPOPEN

#FTPOPEN - FTP Open	
AT#FTPOPEN=[<server:port>,<username>,<password>,<mode>]	Execution command opens an FTP connection toward the FTP server. Parameters: **<server:port>** - string type, address and port of FTP server (factory default port 21). **<username>** - string type, authentication user identification string for FTP. **<password>** - string type, authentication password for FTP. **<mode>** 0 - active mode (factory default) 1 - passive mode Note: Before opening FTP connection the GPRS must been activated with **AT#GPRS=1**
AT#FTPOPEN=?	Test command returns the **OK** result code.

3.5.7.3.3 FTP Close - #FTPCLOSE

#FTPCLOSE - FTP Close	
AT#FTPCLOSE	Execution command closes an FTP connection.
AT#FTPCLOSE=?	Test command returns the **OK** result code.

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3.5.7.3.4 FTP Put - #FTPPUT

#FTPPUT - FTP Put	
AT#FTPPUT=[<filename>]	Execution command, issued during an FTP connection, opens a data connection and starts sending **<filename>** file to the FTP server. If the data connection succeeds, a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent. Parameter: **<filename>** - string type, name of the file. Note: use the escape sequence **+++** to close the data connection. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
AT#FTPPUT=?	Test command returns the **OK** result code.

3.5.7.3.5 FTP Get - #FTPGET

#FTPGET - FTP Get	
AT#FTPGET=[<filename>]	Execution command, issued during an FTP connection, opens a data connection and starts getting a file from the FTP server. If the data connection succeeds a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent. The file is received on the serial port. Parameter: **<filename>** - file name, string type. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
AT#FTPGET=?	Test command returns the OK result code.

3.5.7.3.6 FTP Type - #FTPTYPE

#FTPTYPE - FTP Type	
AT#FTPTYPE=[<type>]	Set command, issued during an FTP connection, sets the file transfer type. Parameter: **<type>** - file transfer type: 0 - binary 1 - ascii Note: The command causes an **ERROR** result code to be returned if no

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#FTPTYPE - FTP Type	
	FTP connection has been opened yet.
#FTPTYPE?	Read command returns the current file transfer type, in the format: **#FTPTYPE: <type>**
#FTPTYPE=?	Test command returns the range of available values for parameter **<type>**: **#FTPTYPE: (0,1)**

3.5.7.3.7 FTP Read Message - #FTPMSG

#FTPMSG - FTP Read Message	
AT#FTPMSG	Execution command returns the last response from the server.
AT#FTPMSG=?	Test command returns the **OK** result code.

3.5.7.3.8 FTP Delete - #FTPDELE

#FTPDELE - FTP Delete	
AT#FTPDELE=[<filename>]	Execution command, issued during an FTP connection, deletes a file from the remote working directory. Parameter: **<filename>** - string type, it's the name of the file to delete. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
AT#FTPDELE=?	Test command returns the **OK** result code.

3.5.7.3.9 FTP Print Working Directory - #FTPPWD

#FTPPWD - FTP Print Working Directory	
AT#FTPPWD	Execution command, issued during an FTP connection, shows the current working directory on FTP server. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
AT#FTPPWD=?	Test command returns the **OK** result code.

3.5.7.3.10 FTP Change Working Directory - #FTPCWD

#FTPCWD - FTP Change Working Directory	
AT#FTPCWD=	Execution command, issued during an FTP connection, changes the

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#FTPCWD - FTP Change Working Directory	
[<dirname>]	working directory on FTP server. Parameter: **<dirname>** - string type, it's the name of the new working directory. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet.
AT#FTPCWD=?	Test command returns the **OK** result code.

3.5.7.3.11 FTP List - #FTPLIST

#FTPLIST - FTP List	
AT#FTPLIST[=[<name>]]	Execution command, issued during an FTP connection, opens a data connection and starts getting from the server the list of contents of the specified directory or the properties of the specified file. Parameter: **<name>** - string type, it's the name of the directory or file. Note: The command causes an **ERROR** result code to be returned if no FTP connection has been opened yet. Note: issuing **AT#FTPLIST<CR>** opens a data connection and starts getting from the server the list of contents of the working directory.
AT#FTPLIST=?	Test command returns the **OK** result code.

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3.5.7.4 Enhanced Easy GPRS® Extension AT Commands

3.5.7.4.1 Authentication User ID - #USERID

#USERID - Authentication User ID	
AT#USERID= [<user>]	Set command sets the user identification string to be used during the authentication step. Parameter: **<user>** - string type, it's the authentication User Id; the max length for this value is the output of Test command, **AT#USERID=?** (factory default is the empty string "").
AT#USERID?	Read command reports the current user identification string, in the format: **#USERID: <user>**
AT#USERID=?	Test command returns the maximum allowed length of the string parameter **<user>**.
Example	AT#USERID="myName" OK AT#USERID? #USERID: "myName" OK

3.5.7.4.2 Authentication Password - #PASSW

#PASSW - Authentication Password	
AT#PASSW= [<pwd>]	Set command sets the user password string to be used during the authentication step. Parameter: **<pwd>** - string type, it's the authentication password; the max length for this value is the output of Test command, **AT#PASSW=?** (factory default is the empty string "").
AT#PASSW=?	Test command returns the maximum allowed length of the string parameter **<pwd>**.
Example	AT#PASSW="myPassword" OK

3.5.7.4.3 Packet Size - #PKTSZ

#PKTSZ - Packet Size	
AT#PKTSZ= [<size>]	Set command sets the default packet size to be used by the TCP/UDP/IP stack for data sending.

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#PKTSZ - Packet Size	
	Parameter: **<size>** - packet size in bytes 0 - automatically chosen by the device 1..1500 - packet size in bytes (factory default is 300)
AT#PKTSZ?	Read command reports the current packet size value. Note: after issuing command **AT#PKTSZ=0**, the Read command reports the value automatically chosen by the device.
AT#PKTSZ=?	Test command returns the allowed values for the parameter **<size>**.
Example	AT#PKTSZ=100 OK AT#PKTSZ? #PKTSZ: 100 OK AT#PKTSZ=0 OK AT#PKTSZ? #PKTSZ: 300 OK *->value automatically chosen by device*

3.5.7.4.4 Data Sending Time-Out - #DSTO

#DSTO -Data Sending Time-Out	
AT#DSTO= [<tout>]	Set command sets the maximum time that the module awaits before sending anyway a packet whose size is less than the default one. Parameter: **<tout>** - packet sending time-out in 100ms units (factory default is 50) 0 - no time-out, wait forever for packets to be completed before send. 1..255 hundreds of ms Note: In order to avoid low performance issues, it is suggested to set the data sending time-out to a value greater than 5. Note: this time-out applies to data whose size is less than packet size and whose sending would have been delayed for an undefined time until new data to be sent had been received and full packet size reached.
AT#DSTO?	Read command reports the current data sending time-out value.
AT#DSTO=?	Test command returns the allowed values for the parameter **<tout>**.
Example	AT#DSTO=10 *->1 sec. time-out* OK AT#DSTO?

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#DSTO -Data Sending Time-Out	
	#DSTO: 10 OK

3.5.7.4.5 Socket Inactivity Time-Out - #SKTTO

#SKTTO - Socket Inactivity Time-Out	
AT#SKTTO= [<tout>]	Set command sets the maximum time with no data exchanging on the socket that the module awaits before closing the socket and deactivating the GPRS context. Parameter: **<tout>** - socket inactivity time-out in seconds units 0 - no time-out. 1..65535 - time-out in sec. units (factory default is 90). Note: this time-out applies when no data is exchanged in the socket for a long time and therefore the socket connection has to be automatically closed and the GPRS context deactivated.
AT#SKTTO?	Read command reports the current socket inactivity time-out value.
AT#SKTTO=?	Test command returns the allowed values for parameter **<tout>**.
Example	AT#SKTTO=30 OK *->(30 sec. time-out)* AT#SKTTO? #SKTTO: 30 OK

3.5.7.4.6 Socket Definition - #SKTSET

#SKTSET - Socket Definition	
AT#SKTSET= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	Set command sets the socket parameters values. Parameters: **<socket type>** - socket protocol type 0 - TCP (factory default) 1 - UDP **<remote port>** - remote host port to be opened 0..65535 - port number (factory default is 0) **<remote addr>** - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: **<host name>**

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#SKTSET - Socket Definition	
	(factory default is the empty string “”) **<closure type>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (**+++**) **<local port>** - local host port to be used on UDP socket 0..65535 - port number Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused. Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused. Note: The resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTSET** command, then an error message will be issued. Note: the DNS Query to be successful requests that: - the GPRS context 1 is correctly set with **+CGDCONT** - the authentication parameters are set **(#USERID**, **#PASSW**) - the GPRS coverage is enough to permit a connection.
AT#SKTSET?	Read command reports the socket parameters values, in the format: **AT#SKTSET: <socket type>,<remote port>,<remote addr>, <closure type>,<local port>**
AT#SKTSET=?	Test command returns the allowed values for the parameters.
Example	AT#SKTSET=0,1024,"123.255.020.001" OK AT#SKTSET=0,1024,"www.telit.net" OK

3.5.7.4.7 Socket Open - #SKTOP

#SKTOP - Socket Open	
AT#SKTOP	Execution command activates the context number 1, proceeds with the authentication with the user ID and password previously set by #USERID and #PASSW commands, and opens a socket connection with the host specified in the #SKTSET command. Eventually, before opening the socket connection, it issues automatically a DNS query to solve the IP address of the host name. If the connection succeeds a **CONNECT** indication is sent, otherwise a **NO CARRIER** indication is sent.
AT#SKTOP=?	Test command returns the **OK** result code.
Example	AT#SKTOP *..GPRS context activation, authentication and socket open..*

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#SKTOP - Socket Open	
	CONNECT
Note	This command is obsolete. It's suggested to use the couple #SGACT and #SO instead of it.

3.5.7.4.8 Query DNS - #QDNS

#QDNS - Query DNS	
AT#QDNS=[<host name>]	Execution command executes a DNS query to solve the host name into an IP address. Parameter: **<host name>** - host name, string type. If the DNS query is successful then the IP address will be reported in the result code: **#QDNS:"<host name>",<IP address>** Note: the command has to activate the GPRS context if it was not previously activated. In this case the context is deactivated after the DNS query. Note: **<IP address>** is in the format: **xxx.xxx.xxx.xxx**
AT#QDNS=?	Test command returns the **OK** result code.
Note	This command requires that the authentication parameters are correctly set and that the GPRS network is present.

3.5.7.4.9 Socket TCP Connection Time-Out - #SKTCT

#SKTCT - Socket TCP Connection Time-Out	
AT#SKTCT=[<tout>]	Set command sets the TCP connection time-out for the first **CONNECT** answer from the TCP peer to be received. Parameter: **<tout>** - TCP first **CONNECT** answer time-out in 100ms units 10..1200 - hundreds of ms (factory default value is 600). Note: this time-out applies only to the time that the TCP stack waits for the **CONNECT** answer to its connection request. Note: The time for activate the GPRS and resolving the name with the DNS query (if the peer was specified by name and not by address) is not counted in this time-out.
AT#SKTCT?	Read command reports the current TCP connection time-out.

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#SKTCT - Socket TCP Connection Time-Out	
AT#SKTCT=?	Test command returns the allowed values for parameter **<tout>**.
Example	AT#SKTCT=600 OK *socket first connection answer time-out has been set to 60 s.*

3.5.7.4.10 Socket Parameters Save - #SKTSAV

#SKTSAV - Socket Parameters Save	
AT#SKTSAV	Execution command saves the actual socket parameters in the NVM of the device. The socket parameters to store are: - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type (UDP/TCP) - Remote Port - Remote Address - TCP Connection Time-Out
AT#SKTSAV=?	Test command returns the **OK** result code.
Example	AT#SKTSAV OK *socket parameters have been saved in NVM*
Note	If some parameters have not been previously specified then a default value will be stored.

3.5.7.4.11 Socket Parameters Reset - #SKTRST

#SKTRST - Socket Parameters Reset	
AT#SKTRST	Execution command resets the actual socket parameters in the NVM of the device to the default ones. The socket parameters to reset are: - User ID - Password - Packet Size - Socket Inactivity Time-Out - Data Sending Time-Out - Socket Type - Remote Port - Remote Address - TCP Connection Time-Out

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#SKTRST - Socket Parameters Reset	
AT#SKTRST=?	Test command returns the **OK** result code.
Example	AT#SKTRST OK *socket parameters have been reset*

3.5.7.4.12 GPRS Context Activation - #GPRS

#GPRS - GPRS Context Activation	
AT#GPRS= **[<mode>]**	Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID. Parameter: **<mode>** - GPRS context activation mode 0 - GPRS context deactivation request 1 - GPRS context activation request In the case that the GPRS context has been activated, the result code **OK** is preceded by the intermediate result code: **+IP: <ip_address_obtained>** reporting the local IP address obtained from the network.
AT#GPRS?	Read command reports the current status of the GPRS context, in the format: **#GPRS: <status>** where: **<status>** 0 - GPRS context deactivated 1 - GPRS context activated 2 - GPRS context activation pending.
AT#GPRS=?	Test command returns the allowed values for parameter **<mode>**.
Example	AT#GPRS=1 +IP: 129.137.1.1 OK *Now GPRS Context has been activated and our IP is 129.137.1.1* AT#GPRS=0 OK *Now GPRS context has been deactivated, IP is lost.*

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3.5.7.4.13 Socket Dial - #SKTD

#SKTD - Socket Dial	
AT#SKTD= [<socket type>, <remote port>, <remote addr>, [<closure type>], [<local port>]]	Set command opens the socket towards the peer specified in the parameters. Parameters: **<socket type>** - socket protocol type 0 - TCP (factory default) 1 - UDP **<remote port>** - remote host port to be opened 0..65535 - port number (factory default is 0) **<remote addr>** - address of the remote host, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: **<host name>** (factory default is the empty string “”) **<closure type>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (**+++**) **<local port>** - local host port to be used on UDP socket 0..65535 - port number Note: **<closure type>** parameter is valid only for TCP socket type, for UDP sockets shall be left unused. Note: **<local port>** parameter is valid only for UDP socket type, for TCP sockets shall be left unused. Note: the resolution of the host name is done when opening the socket, therefore if an invalid host name is given to the **#SKTD** command, then an error message will be issued. Note: the command to be successful requests that: - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set **(**#USERID, #PASSW) the GPRS coverage is enough to permit a connection - the GPRS has been activated with **AT#GPRS=1** Note: If all parameters are omitted then the behaviour of Set command is the same as Read command.
AT#SKTD?	Read command reports the socket dial parameters values, in the format: **AT#SKTD: <socket type>,<remote port>,<remote addr>, <closure type>,<local port>**
AT#SKTD=?	Test command returns the allowed values for the parameters.
Example	`AT#SKTD=0,1024,"123.255.020.001",255` `CONNECT`

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#SKTD - Socket Dial	
	AT#SKTD=1,1024,"123.255.020.001", ,1025 CONNECT *In this way my local port 1025 is opened to the remote port 1024* AT#SKTD=0,1024,"www.telit.net", 255 CONNECT
Note	The main difference between this command and #SKTOP is that this command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the #GPRS setting, therefore when the connection made with **#SKTD** is closed the context (and hence the local IP address) is maintained.

3.5.7.4.14 Socket Listen - #SKTL

#SKTL - Socket Listen	
AT#SKTL =[<mode>, <socket type>, <input port>, [<closure type>]]	Execution command opens/closes the socket listening for connection requests. Parameters: **<mode>** - socket mode 0 - closes socket listening 1 - starts socket listening **<socket type>** - socket protocol type 0 - TCP **<input port>** - local host input port to be listened 0..65535 - port number **<closure type>** - socket closure behaviour for TCP 0 - local host closes immediately when remote host has closed (default) 255 - local host closes after an escape sequence (**+++**) Command returns the **OK** result code if successful. Note: the command to be successful requests that: - the GPRS context 1 is correctly set with +CGDCONT - the authentication parameters are set (#USERID, #PASSW) - the GPRS coverage is enough to permit a connection - the GPRS has been activated with **AT#GPRS=1** When a connection request comes on the input port, if the sender is not filtered by the internal firewall (see command #FRWL), an unsolicited code is reported: **+CONN FROM: <remote addr>**

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#SKTL - Socket Listen	
	Where: **<remote addr>** - host address of the remote machine that contacted the device. When the connection is established the **CONNECT** indication is given and the modem goes into data transfer mode. On connection close or when context is closed with **#GPRS=0** the socket is closed and no listen is anymore active. If the context is closed by the network while in listening, the socket is closed, no listen is anymore active and an unsolicited code is reported: **#SKTL: ABORTED**
AT#SKTL?	Read command returns the current socket listening **status** and the last settings of parameters **<socket type>**,**<input port>** and **<closure type>**, in the format: **#SKTL: <status>,<socket type>**,**<input port>,<closure type>** Where **<status>** - socket listening status 0 - socket not listening 1 - socket listening
AT#SKTL=?	Test command returns the allowed values for parameters **<mode>**, **<socket type>**, **<input port>** and **<closure type>**.
Example	*Activate GPRS* AT#GPRS=1 +IP: ###.###.###.### OK *Start listening* AT#SKTL=1,0,1024 OK or AT#SKTL=1,0,1024,255 OK *Receive connection requests* +CONN FROM: 192.164.2.1 CONNECT *exchange data with the remote host* *send escape sequence* +++ NO CARRIER

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#SKTL - Socket Listen	
	Now listen is not anymore active *to stop listening* AT#SKTL=0,0,1024, 255 OK
Note	The main difference between this command and **#SKTD** is that **#SKTL** does not contact any peer, nor does any interaction with the GPRS context status, leaving it **ON** or **OFF** according to the **#GPRS** setting, therefore when the connection made with **#SKTL** is closed the context (and hence the local IP address) is maintained.

3.5.7.4.15 Socket Listen Ring Indicator - #E2SLRI

#E2SLRI - Socket Listen Ring Indicator	
AT#E2SLRI=[<n>]	Set command enables/disables the Ring Indicator pin response to a Socket Listen connect and, if enabled, the duration of the negative going pulse generated on receipt of connect. Parameter: **<n>** - **RI** enabling 0 - **RI** disabled for Socket Listen connect (factory default) 50..1150 - **RI** enabled for Socket Listen connect; a negative going pulse is generated on receipt of connect and **<n>** is the duration in ms of this pulse.
AT#E2SLRI?	Read command reports whether the Ring Indicator pin response to a Socket Listen connect is currently enabled or not, in the format: **#E2SLRI: <n>**
AT#E2SLRI=?	Test command returns the allowed values for parameter **<status>.**

3.5.7.4.16 Firewall Setup - #FRWL

#FRWL - Firewall Setup	
AT#FRWL= **[<action>,** **<ip_address>,** **<net mask>]**	Execution command controls the internal firewall settings. Parameters: **<action>** - command action 0 - remove selected chain 1 - add an **ACCEPT** chain 2 - remove all chains (**DROP** everything); **<ip_addr>** and **<net_mask>** has no meaning in this case. **<ip_addr>** - remote address to be added into the **ACCEPT** chain; string type, it can be any valid IP address in the format: xxx.xxx.xxx.xxx **<net_mask>** - mask to be applied on the **<ip_addr>**; string type, it can be any valid IP address mask in the format: xxx.xxx.xxx.xxx

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#FRWL - Firewall Setup	
	Command returns **OK** result code if successful. Note: the firewall applies for incoming (listening) connections only. Firewall general policy is **DROP**, therefore all packets that are not included into an **ACCEPT** chain rule will be silently discarded. When a packet comes from the IP address **incoming_IP**, the firewall chain rules will be scanned for matching with the following criteria: **incoming_IP & <net_mask> = <ip_addr> & <net_mask>** If criteria is matched, then the packet is accepted and the rule scan is finished; if criteria is not matched for any chain the packet is silently dropped.
AT#FRWL?	Read command reports the list of all **ACCEPT** chain rules registered in the Firewall settings in the format: **#FRWL: <ip_addr>,<net_mask>** **#FRWL: <ip_addr>,<net_mask>** **….** **OK**
AT#FRWL=?	Test command returns the allowed values for parameter **<action>.**
Example	*Let assume we want to accept connections only from our devices which are on the IP addresses ranging from 197.158.1.1 to 197.158.255.255* *We need to add the following chain to the firewall:* AT#FRWL=1,"197.158.1.1","255.255.0.0" OK
Note	For outgoing connections made with #SKTOP and #SKTD the remote host is dynamically inserted into the **ACCEPT** chain for all the connection duration. Therefore the **#FRWL** command shall be used only for defining the **#SKTL** behaviour, deciding which hosts are allowed to connect to the local device. Rules are not saved in NVM, at startup the rules list will be empty.

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3.5.7.4.17 GPRS Data Volume - #GDATAVOL

#GDATAVOL - GPRS Data Volume	
AT#GDATAVOL=[<mode>]	Execution command reports, for every active PDP context, the amount of data the last GPRS session received and transmitted, or it will report the total amount of data received and transmitted during all past GPRS sessions, since last reset. Parameter: **<mode>** 0 - it resets the GPRS data counter for the all the available PDP contexts (1-16) 1 - it reports the last GPRS session data counter for the all the set PDP contexts (i.e. all the PDP contexts with APN parameter set using +CGDCONT), in the format: **#GDATAVOL: <cid*n*>,<tot*n*>,<sent*n*>,<received*n*>[<CR><LF>** **#GDATAVOL: <cid*m*>,<tot*m*>,<sent*m*>,<received*m*>[…]]** where: **<cid*n*>** - PDP context identifier 1..16 - numeric parameter which specifies a particular PDP context definition **<tot*n*>** - number of bytes either received or transmitted in the last GPRS session for **<cid*n*>** PDP context; **<sent*n*>** - number of bytes transmitted in the last GPRS session for **<cid*n*>** PDP context; **<received*n*>** - number of bytes received in the last GPRS session for **<cid*n*>** PDP context; 2 - it reports the total GPRS data counter, since last reset, for the all the set PDP contexts (i.e. all the PDP context with APN parameter set using **+CGDCONT**), in the format: **#GDATAVOL: <cid*n*>,<tot*n*>,<sent*n*>,<received*n*>[<CR><LF>** **#GDATAVOL: <cid*m*>,<tot*m*>,<sent*m*>,<received*m*>[…]]** where: **<cid*n*>** - PDP context identifier 1..16 - numeric parameter which specifies a particular PDP context definition **<tot*n*>** - number of bytes either received or transmitted, in every GPRS session since last reset, for **<cid*n*>** PDP context; **<sent*n*>** - number of bytes transmitted, in every GPRS session since last reset, for **<cid*n*>** PDP context; **<received*n*>** - number of bytes received, in every GPRS session since last reset, for **<cid*n*>** PDP context; Note: last GPRS session counters are not saved in NVM so they are loosen at power off.

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#GDATAVOL - GPRS Data Volume	
	Note: total GPRS session counters are saved on NVM.
AT#GDATAVOL=?	Test command returns the range of supported values for parameter **<mode>.**
Note	Internal use only.

3.5.7.5 E-mail Management AT Commands

3.5.7.5.1 E-mail SMTP Server - #ESMTP

#ESMTP - E-mail SMTP Server	
AT#ESMTP=[<smtp>]	Set command sets the SMTP server address, used for E-mail sending. SMTP server can be specified as IP address or as nick name. Parameter: **<smtp>** - SMTP server address, string type. This parameter can be either: - any valid IP address in the format: xxx.xxx.xxx.xxx - any host name to be solved with a DNS query in the format: **<host name>** (factory default is the empty string “”) Note: the max length for **<smtp>** is the output of Test command.
AT#ESMTP?	Read Command reports the current SMTP server address, in the format: **#ESMTP: <smtp>**
AT#ESMTP=?	Test command returns the max length for the parameter **<smtp>.**
Example	AT#ESMTP="smtp.mydomain.com" OK
Note	The SMTP server used shall be inside the APN space (the smtp server provided by the network operator) or it must allow the Relay, otherwise it will refuse to send the e-mail.

3.5.7.5.2 E-mail Sender Address - #EADDR

#EADDR - E-mail Sender Address	
AT#EADDR=[<e-add>]	Set command sets the sender address string to be used for sending the e-mail. Parameter: **<e-addr>** - sender address, string type. - any string value up to max length reported in the Test command. (factory default is the empty string “”)
AT#EADDR?	Read command reports the current sender address, in the format: **#EADDR: <e-addr>**
AT#EADDR=?	Test command returns the maximum allowed length of the string parameter **<e-addr>.**
Example	AT#EADDR="me@email.box.com" OK AT#EADDR? #EADDR: "me@email.box.com"

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#EADDR - E-mail Sender Address	
	OK

3.5.7.5.3 E-mail Authentication User Name - #EUSER

#EUSER - E-mail Authentication User Name	
AT#EUSER= [<e-user>]	Set command sets the user identification string to be used during the authentication step of the SMTP. Parameter: **<e-user>** - e-mail authentication User ID, string type. - any string value up to max length reported in the Test command. (factory default is the empty string “”) Note: if no authentication is required then the **<e-user>** parameter shall be empty "".
AT#EUSER?	Read command reports the current user identification string, in the format: **#EUSER: <e-user>**
AT#EUSER=?	Test command returns the maximum allowed length of the string parameter **<e-user>**.
Example	AT#EUSER="myE-Name" OK AT#EUSER? #EUSER: "myE-Name" OK
Note	It is a different user field than the one used for GPRS authentication (see #USERID).

3.5.7.5.4 E-mail Authentication Password - #EPASSW

#EPASSW - E-mail Authentication Password	
AT#EPASSW= [<e-pwd>]	Set command sets the password string to be used during the authentication step of the SMTP. Parameter: **<e-pwd>** - e-mail authentication password, string type. - any string value up to max length reported in the Test command. (factory default is the empty string “”) Note: if no authentication is required then the **<e-pwd>** parameter shall be empty "".
AT#EPASSW=?	Test command returns the maximum allowed length of the string parameter **<e-pwd>**.

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#EPASSW - E-mail Authentication Password	
Example	AT#EPASSW="myPassword" OK
Note	It is a different password field than the one used for GPRS authentication (see #PASSW).

3.5.7.5.5 E-mail Sending With GPRS Context Activation - #SEMAIL

#SEMAIL - E-mail Sending With GPRS Context Activation	
AT#SEMAIL= [<da>,<subj>, <att> [,<filename>]]	Execution command activates a GPRS context, if not previously activated by #EMAILACT, and sends an e-mail message. The GPRS context is deactivated when the e-mail is sent. Parameters: **<da>** - destination address, string type. **<subj>** - subject of the message, string type. **<att>** - attached image flag 0 - don't attach any image 1 - attach the last snapshot taken **<filename>** - image name (default is “snapshot.jpg”) The device responds to the command with the prompt '**>**' and awaits for the message body text. To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex). If e-mail message is successfully sent, then the response is **OK**. If message sending fails for some reason, an error code is reported Note: Care must be taken to ensure that during the command execution, no other commands are issued. To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands. Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute.
AT#SEMAIL=?	Test command returns the **OK** result code.
Example	AT#SEMAIL="me@myaddress.com","subject of the mail",1 >message body… this is the text of the mail message… CTRL-Z *..wait..* OK *Message has been sent.*

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#SEMAIL - E-mail Sending With GPRS Context Activation	
Note	This command is obsolete. It's suggested to use the couple #EMAILACT and #EMAILD instead of it.

3.5.7.5.6 E-mail GPRS Context Activation - #EMAILACT

#EMAILACT - E-mail GPRS Context Ativation	
AT#EMAILACT=[<mode>]	Execution command deactivates/activates the GPRS context, eventually proceeding with the authentication with the parameters given with #PASSW and #USERID. Parameter: **<mode>** - GPRS context activation mode 0 - GPRS context deactivation request 1 - GPRS context activation request
AT#EMAILACT?	Read command reports the current status of the GPRS context for the e-mail, in the format: **#EMAILACT: <status>** where: **<status>** 0 - GPRS context deactivated 1 - GPRS context activated
AT#EMAILACT=?	Test command returns the allowed values for parameter **<mode>**.
Example	AT#EMAILACT=1 OK *Now GPRS Context has been activated* AT#EMAILACT=0 OK *Now GPRS context has been deactivated.*

3.5.7.5.7 E-mail Sending - #EMAILD

#EMAILD - E-mail Sending	
AT#EMAILD=[<da>,<subj>,<att>[,<filename>]]	Execution command sends an e-mail message if GPRS context has already been activated with **AT#SGACT=1,1** or **AT#EMAILACT=1** or **AT#GPRS=1**. Parameters: **<da>** - destination address, string type. **<subj>** - subject of the message, string type **<att>** - attached image flag 0 - don't attach any image 1 - attach the last snapshot taken **<filename>** - image name (default is "snapshot.jpg")

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#EMAILD - E-mail Sending	
	The device responds to the command with the prompt '**>**' and awaits for the message body text. To complete the operation send **Ctrl-Z** char (**0x1A** hex); to exit without writing the message send **ESC** char (**0x1B** hex). If e-mail message is successfully sent, then the response is **OK**. If message sending fails for some reason, an error code is reported Note: Care must be taken to ensure that during the command execution, no other commands are issued. To avoid malfunctions is suggested to wait for the **OK** or **ERROR / +CMS ERROR:<err>** response before issuing further commands. Note: sending an e-mail with an image attachment can take quite a long time since it can be over 50Kb to send and can take more than 1 minute.
AT#EMAILD=?	Test command returns the **OK** result code.

Example	`AT#EMAILD=”me@myaddress.com”,”subject of the mail”,1`
	`>message body… this is the text of the mail message…`
	`CTRL-Z`
	
	`..wait..`
	`OK`
	`Message has been sent.`

Note	The only difference between this command and the #SEMAIL is that this command does not interact with the GPRS context status, leaving it **ON** or **OFF** according to the #EMAILACT setting, thus, when the connection made with **#EMAILD** is closed, the context status is maintained.

3.5.7.5.8 E-mail Parameters Save - #ESAV

#ESAV - E-mail Parameters Save	
AT#ESAV	Execution command saves the actual e-mail parameters in the NVM of the device. The values stored are: - E-mail User Name - E-mail Password - E-mail Sender Address - E-mail SMTP server
AT#ESAV=?	Test command returns the **OK** result code.
Note	If some parameters have not been previously specified then a default value will be taken.

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3.5.7.5.9 E-mail Parameters Reset - #ERST

#ERST - E-mail Parameters Reset	
AT#ERST	Execution command resets the actual e-mail parameters in the NVM of the device to the default ones. The values reset are: - E-mail User Name - E-mail Password - E-mail Sender Address - E-mail SMTP server
AT#ERST=?	Test command returns the **OK** result code.

3.5.7.5.10 SMTP Read Message - #EMAILMSG

#EMAILMSG - SMTP Read Message	
AT#EMAILMSG	Execution command returns the last response from SMTP server.
AT#EMAILMSG=?	Test command returns the **OK** result code.

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3.5.7.6 Easy Scan® Extension AT Commands

Note: it is strongly suggested to issue all the Easy Scan® Extension AT commands with **NO SIM** inserted, to avoid a potential conflict with normal module operations, such as “incoming call”, “periodic location update, “periodic routing area update” and so on.

3.5.7.6.1 Network Survey - #CSURV

#CSURV - Network Survey	
AT#CSURV[= [<s>,<e>]]	Execution command allows to perform a quick survey through channels belonging to the band selected by last **#BND** command issue, starting from channel **<s>** to channel **<e>**. Issuing **AT#CSURV<CR>**, a full band scan is performed. Parameters: **<s>** - starting channel **<e>** - ending channel After issuing the command the device responds with the string: **Network survey started…** and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format: **(For BCCH-Carrier)** **arfcn: <arfcn> bsic: <bsic> rxLev: <rxLev> ber: <ber> mcc: <mcc> mnc: <mnc> lac: <lac> cellId: <cellId> cellStatus: <cellStatus> numArfcn: <numArfcn> arfcn: [<arfcn1> ..[<arfcn64>]] [numChannels: <numChannels> array: [<ba1> ..[<ba32>]] [pbcch: <pbcch> [nom: <nom> rac: <rac> spgc: <spgc> pat: <pat> nco: <nco> t3168: <t3168> t3192: <t3192> drxmax: <drxmax> ctrlAck: <ctrlAck> bsCVmax: <bsCVmax> alpha: <alpha> pcMeasCh: <pcMeasCh>]]]** **<CR><LF><CR><LF><CR><LF>** where: **<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel) **<bsic>** - base station identification code; if #CSURVF last setting is 0, **<bsic>** is a decimal number, else it is a 2-digits octal number **<rxLev>** - decimal number; it is the receiption level (in dBm) **<ber>** - decimal number; it is the bit error rate (in %) **<mcc>** - hexadecimal 3-digits number; it is the mobile country code **<mnc>** - hexadecimal 2-digits number; it is the mobile network code

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#CSURV - Network Survey	
	<lac> - location area code; if #CSURVF last setting is 0, **<lac>** is a decimal number, else it is a 4-digits hexadecimal number **<cellId>** - cell identifier; if #CSURVF last setting is 0, **<cellId>** is a decimal number, else it is a 4-digits hexadecimal number **<cellStatus>** - string type; it is the cell status ..CELL_SUITABLE - C0 is a suitable cell. CELL_LOW_PRIORITY - the cell is low priority based on the received system information. CELL_FORBIDDEN - the cell is forbidden. CELL_BARRED - the cell is barred based on the received system information. CELL_LOW_LEVEL - the cell **<rxLev>** is low. CELL_OTHER - none of the above e.g. exclusion timer running, no BCCH available…etc. **<numArfcn>** - number of valid channels in the Cell Channel Description **<arfcn*n*>** - arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**) **<numArfcn>** - decimal number; it is the number of valid channels in the Cell Channel Description **<arfcn*n*>** - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**) **<numChannels>** - decimal number; it is the number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last #CSURVEXT setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier. **<ba*n*>** - decimal number; it is the arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this information for non-serving cells depends on last #CSURVEXT setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1** or **2** this information is displayed also for every valid scanned BCCH carrier. *(The following informations will be printed only if GPRS is supported in the cell)* **<pbcch**> - packet broadcast control channel 0 - pbcch not activated on the cell 1 - pbcch activated on the cell **<nom**> - network operation mode 1 2 3 **<rac**> - routing area code 0..255 -

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#CSURV - Network Survey	
	<spgc> - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell **<pat>** - priority access threshold 0 - 3..6 - **<nco>** - network control order 0..2 - **<t3168>** - timer 3168 **<t3192>** - timer 3192 **<drxmax>** - discontinuous reception max time (in seconds) **<ctrlAck>** - packed control ack **<bsCVmax> -** blocked sequenc countdown max value **<alpha> -** alpha parameter for power control **<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH **(For non BCCH-Carrier)** **arfcn: <arfcn> rxLev: <rxLev>** where: **<arfcn>** - decimal number; it is the RF channel **<rxLev>** - decimal number; it is the receiption level (in dBm) Lastly, the **#CSURV** output ends in two ways, depending on the last **#CSURVF** setting: if **#CSURVF=0** or **#CSURVF=1** The output ends with the string: **Network survey ended** if **#CSURVF=2** the output ends with the string: **Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)** where **<NoARFCN>** - number of scanned frequencies **<NoBCCH>** - number of found BCCh
Example	AT#CSURV `Network survey started…`

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#CSURV - Network Survey	
	arfcn: 48 bsic: 24 rxLev: -52 ber: 0.00 mcc: 610 mnc: 1 lac: 33281 cellId: 3648 cellStatus: CELL_SUITABLE numArfcn: 2 arfcn: 30 48 numChannels: 5 array: 14 19 22 48 82 arfcn: 14 rxLev: 8 Network survey ended OK (wcdma) at#csurv Network survey started ... uarfcn: 10812 rxLev: -87 mcc: 450 mnc: 08 scr code: 6528 cellId: 10683976 lac: 5121 cellStatus: CELL_LOW_PRIORITY uarfcn: 10713 rxLev: -87 mcc: 450 mnc: 05 scr code: 1200 cellId: 2171648 lac: 8209 cellStatus: CELL_LOW_PRIORITY Network survey ended OK
Note	The command is executed within max. 2 minute.

3.5.7.6.2 Network Survey (Numeric Format) - #CSURVC

#CSURVC - Network Survey (Numeric Format)	
AT#CSURVC[= [<s>,<e>]]	Execution command allows to perform a quick survey through channels belonging to the band selected by last #BND command issue, starting from channel **<s>** to channel **<e>**. Issuing **AT#CSURVC<CR>**, a full band scan is performed. Parameters: **<s>** - starting channel **<e>** - ending channel After issuing the command the device responds with the string: **Network survey started…**

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#CSURVC - Network Survey (Numeric Format)	
	and, after a while, a list of informations, one for each received carrier, is reported, each of them in the format: **(For BCCH-Carrier)** **<arfcn>,<bsic>,<rxLev>,<ber>,<mcc>,<mnc>,<lac>,<cellId>,** **<cellStatus>,<numArfcn>[,<arfcn1> ..[<arfcn64>]]** **[,<numChannels>[,<ba1> ..[<ba32>]][,<pbcch>[,<nom>,<rac>,<spgc>** **<pat> <nco> <t3168> <t3192> <drxmax> <ctrlAck>** **<bsCVmax>,<alpha>,<pcMeasCh>]]]** **<CR><LF><CR><LF><CR><LF>** where: **<arfcn>** - C0 carrier assigned radio channel (BCCH - Broadcast Control Channel) **<bsic>** - base station identification code; if #CSURVF last setting is 0, **<bsic>** is a decimal number, else it is a 2-digits octal number **<rxLev>** - decimal number; it is the receiption level (in dBm) **<ber>** - decimal number; it is the bit error rate (in %) **<mcc>** - hexadecimal 3-digits number; it is the mobile country code **<mnc>** - hexadecimal 2-digits number; it is the mobile network code **<lac>** - location area code; if #CSURVF last setting is 0, **<lac>** is a decimal number, else it is a 4-digits hexadecimal number **<cellId>** - cell identifier; if #CSURVF last setting is 0, **<cellId>** is a decimal number, else it is a 4-digits hexadecimal number **<cellStatus>** - string type; it is the cell status ..0 - C0 is a suitable cell (CELL_SUITABLE). 1 - the cell is low priority based on the received system information (CELL_LOW_PRIORITY). 2 - the cell is forbidden (CELL_FORBIDDEN). 3 - the cell is barred based on the received system information (CELL_BARRED). 4 - the cell **<rxLev>** is low (CELL_LOW_LEVEL). 5 - none of the above e.g. exclusion timer running, no BCCH available…etc.. (CELL_OTHER). **<numArfcn>** - decimal number; it is the number of valid channels in the Cell Channel Description **<arfcn*n*>** - decimal number; it is the arfcn of a valid channel in the Cell Channel Description (*n* is in the range **1..<numArfcn>**) **<numChannels>** - decimal number; it is the number of valid channels in the BCCH Allocation list; the output of this information for non-serving cells depends on last #CSURVEXT setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier. **<ba*n*>** - decimal number; it is the arfcn of a valid channel in the BA list (***n*** is in the range **1..<numChannels>**); the output of this

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#CSURVC - Network Survey (Numeric Format)	
	information for non-serving cells depends on last #CSURVEXT setting: 1. if **#CSURVEXT=0** this information is displayed only for serving cell 2. if **#CSURVEXT=1 or 2** this information is displayed also for every valid scanned BCCH carrier. *(The following informations will be printed only if GPRS is supported in the cell)* **<pbcch>** - packet broadcast control channel 0 - pbcch not activated on the cell 1 - pbcch activated on the cell **<nom>** - network operation mode 1 2 3 **<rac>** - routing area code 0..255 - **<spgc>** - SPLIT_PG_CYCLE support ..0 - SPLIT_PG_CYCLE is not supported on CCCH on this cell ..1 - SPLIT_PG_CYCLE is supported on CCCH on this cell **<pat>** - priority access threshold 0 - 3..6 - **<nco>** - network control order 0..2 - **<t3168>** - timer 3168 **<t3192>** - timer 3192 **<drxmax>** - discontinuous reception max time (in seconds) **<ctrlAck>** - packed control ack **<bsCVmax> -** blocked sequenc countdown max value **<alpha> -** alpha parameter for power control **<pcMeasCh> -** type of channel which shall be used for downlink measurements for power control 0 - BCCH 1 - PDCH **(For non BCCH-Carrier)** **<arfcn>,<rxLev>** where: **<arfcn>** - decimal number; it is the RF channel **<rxLev>** - decimal number; it is the receiption level (in dBm) The last information from **#CSURVC** depends on the last **#CSURVF** setting:

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#CSURVC - Network Survey (Numeric Format)	
	#CSURVF=0 or **#CSURVF=1** The output ends with the string: **Network survey ended** **#CSURVF=2** the output ends with the string: **Network survey ended (Carrier: <NoARFCN> BCCh: <NoBCCh>)** where **<NoARFCN**> - number of scanned frequencies **<NoBCCH**> - number of found BCCh
Example	AT#CSURVC Network survey started… 48,24,-52,0.00,610,1,33281,3648,0,2,30 48,5,14 19 22 48 82 14,8 Network survey ended OK
Note	The command is executed within max. 2 minute. The information provided by **#CSURVC** is the same as that provided by #CSURV. The difference is that the output of **#CSURVC** is in numeric format only.

3.5.7.6.3 Network Survey Of User Defined Channels - #CSURVU

#CSURVU - Network Survey Of User Defined Channels	
AT#CSURVU=[<ch1>[,<ch2>[,… [,<ch10>]]]]	Execution command allows to perform a quick survey through the given channels. The range of available channels depends on the last #BND issue. The result format is like command #CSURV. Parameters: **<ch*n*>** - channel number (arfcn)
Example	AT#CSURVU=59,110 Network survey started… arfcn: 59 bsic: 16 rxLev: -76 ber: 0.00 mcc: 546 mnc: 1

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#CSURVU - Network Survey Of User Defined Channels	
	lac: 54717 cellId: 21093 cellStatus: CELL_SUITABLE numArfcn 2 arfcn: 36 59 arfcn: 110 rxLev: -107 Network survey ended OK
Note	The command is executed within max. 2 minute.

3.5.7.6.4 Network Survey Of User Defined Channels (Numeric Format) - #CSURVUC

#CSURVUC - Network Survey Of User Defined Channels (Numeric Format)	
AT#CSURVUC=[<ch1>[,<ch2>[,… [,<ch10>]]]]	Execution command allows to perform a quick survey through the given channels. The range of available channels depends on the last #BND issue. The result format is like command **#CSURVC**. Parameters: **<ch*n*>** - channel number (arfcn)
Example	AT#CSURVUC=59,110 Network survey started… 59,16,-76,0.00,546,1,54717,21093,0,2,36 59 110,-107 Network survey ended OK
Note	The command is executed within max. 2 minute. The information provided by **#CSURVUC** is the same as that provided by #CSURVU. The difference is that the output of **#CSURVUC** is in numeric format only.

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3.5.7.6.5 BCCH Network Survey - #CSURVB

#CSURVB - BCCH Network Survey	
AT#CSURVB=[<n>]	Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found. The result format is like command #CSURV. Parameter: **<n>** - number of desired BCCH carriers 1..M
AT#CSURVB=?	Test command reports the range of values for parameter **<n>** in the format: **(1-M)** where **M** is the maximum number of available frequencies depending on last selected band.

3.5.7.6.6 BCCH Network Survey (Numeric Format) - #CSURVBC

#CSURVBC - BCCH Network Survey (Numeric Format)	
AT#CSURVBC=[<n>]	Execution command performs a quick network survey through **M** (maximum number of available frequencies depending on last selected band) channels. The survey stops as soon as **<n>** BCCH carriers are found. The result is given in numeric format and is like command #CSURVC. Parameter: **<n>** - number of desired BCCH carriers 1..M
AT#CSURVBC=?	Test command reports the range of values for parameter **<n>** in the format: **(1-M)** where **M** is the maximum number of available frequencies depending on last selected band.

3.5.7.6.7 Network Survey Format - #CSURVF

#CSURVF - Network Survey Format	
AT#CSURVF=[<format>]	Set command controls the format of the numbers output by all the Easy Scan® Parameter:

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#CSURVF - Network Survey Format	
	<format> - numbers format 0 - Decimal 1 - Hexadecimal values, no text 2 - Hexadecimal values with text
AT#CSURVF?	Read command reports the current number format, as follows: **#CSURVF: <format>**
AT#CSURVF=?	Test command reports the supported range of values for the parameter **<format>**.

3.5.7.6.8 <CR><LF> Removing On Easy Scan® Commands Family - #CSURVNLF

#CSURVNLF - <CR><LF> Removing On Easy Scan® Commands Family	
AT#CSURVNLF=[<value>]	Set command enables/disables the automatic **<CR><LF>** removing from each information text line. Parameter: **<value>** 0 - disables **<CR><LF>** removing; they'll be present in the information text (factory default) 1 - remove **<CR><LF>** from imformation text
AT#CSURVNLF?	Read command reports whether automatic **<CR><LF>** removing is currently enabled or not, in the format: **<value>**
AT#CSURVNLF=?	Test command reports the range of values for parameter **<value>.**

3.5.7.6.9 Extended Network Survey - #CSURVEXT

#CSURVEXT - Extended Network Survey	
AT#CSURVEXT[=<value>]	Set command enables/disables extended network survey. Parameter: **<value>** 0 - disables extended network survey (factory default) 1 - enables extended network survey; all the network survey execution commands (#CSURV, #CSURVC, #CSURVU, #CSURVUC, #CSURVB, #CSURVBC) display the BAList for every valid scanned BCCh carrier 2 - enables extended network survey; all the network survey execution commands (#CSURV, #CSURVC, #CSURVU, #CSURVUC,

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#CSURVEXT - Extended Network Survey	
	#CSURVB, #CSURVBC) display the BAList for every valid scanned BCCh carrier and, if GPRS is supported in the cell, they report some GPRS informations carried by the System Information 13 of the BCCh
AT#CSURVEXT?	Read command reports whether extended network survey is currently enabled or not, in the format: **<value>**
AT#CSURVEXT=?	Test command reports the range of values for parameter **<value>.**

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3.5.7.7 GPS AT Commands Set(UC864-G only)

3.5.7.7.1 GPS Controller Power Management - $GPSP

$GPSP - GPS Controller Power Management	
AT$GPSP=<status>	Set command allows to manage power-up or down of the GPS controller Parameter: **<status>** 0 - GPS controller is powered down 1 - GPS controller is powered up (default) Note: the current setting is stored through **$GPSSAV**
AT$GPSP?	Read command reports the current value of the **<status>** parameter, in the format: **$GPSP: <status>**
AT$GPSP=?	Test command reports the range of supported values for parameter **<status>**
Example	AT$GPSP=0 OK

3.5.7.7.2 GPS Reset - $GPSR

$GPSR - GPS Reset	
AT$GPSR=<reset_type>	Execution command allows to reset the GPS controller. Parameter: **<reset_type>** 0 - Hardware reset: the GPS receiver is reset and restarts by using the values stored in the internal memory of the GPS receiver. 1 - Coldstart (No Almanac, No Ephemeris): this option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained. It is available in controlled mode only. 2 - Warmstart (No ephemeris): this option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Receiver Initialization Setup screen. The almanac is retained but the ephemeris is cleared. It is available in controlled mode only. 3 - Hotstart (with stored Almanac and Ephemeris): the GPS receiver restarts by using the values stored in the internal memory of the GPS receiver; validated ephemeris and almanac. It is available in controlled mode only.
AT$GPSR=?	Test command reports the range of supported values for parameter **<reset_type>**
Example	AT$GPSR=0 OK

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3.5.7.7.3 Unsolicited NMEA Data Configuration - $GPSNMUN

$GPSNMUN - Unsolicited NMEA Data Configuration	
AT$GPSNMUN= <enable> [,<GGA>,<GLL>, <GSA>,<GSV>, <RMC>,<VTG >]	Set command permits to activate an Unsolicited streaming of GPS data (in NMEA format) through the standard GSM serial port and defines which NMEA sentences will be available Parameters: **<enable>** 0 - NMEA data stream de-activated (default) 1 - NMEA data stream activated with the following unsolicited response syntax: **$GPSNMUN:<CR><NMEA SENTENCE><CR>** 2 - NMEA data stream activated with the following unsolicited response syntax: **<NMEA SENTENCE><CR>** 3 - dedicated NMEA data stream; it is not possible to send AT commands; with the escape sequence '+++' the user can return to command mode **<GGA>** - Global Positioning System Fix Data 0 - disable (default) 1 - enable **<GLL>** - Geographical Position - Latitude/Longitude 0 - disable (default) 1 - enable **<GSA>** - GPS DOP and Active Satellites 0 - disable (default) 1 - enable **<GSV>** - GPS Satellites in View 0 - disable (default) 1 - enable **<RMC>** - recommended Minimum Specific GPS Data 0 - disable (default) 1 - enable **<VTG>** - Course Over Ground and Ground Speed 0 - disable (default) 1 - enable
AT$GPSNMUN?	Read command returns whether the unsolicited GPS NMEA data streaming is currently enabled or not, along with the NMEA sentences availability status, in the format: **$GPSNMUN:<enable>,<GGA>,<GLL>,<GSA>,<GSV>,<RMC>,<VTG >**
AT$GPSNMUN=?	Test command returns the supported range of values for parameters **<enable>, <GGA>, <GLL>, <GSA>, <GSV>, <RMC>, <VTG>**
Example	AT$GPSNMUN=1,0,0,1,0,0,0 OK *These sets the GSA as available sentence in the unsolicited message* AT$GPSNMUN=0 OK *Turn-off the unsolicited mode* AT$GPSNMUN?

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$GPSNMUN - Unsolicited NMEA Data Configuration	
	$GPSNMUN: 1,0,0,1,0,0,0 OK *Give the current frame selected (GSA)* The unsolicited message will be: $GPSNMUN: $GPGSA,A,3,23,20,24,07,13,04,02,,,,,,2.4,1.6,1.8*3C
Reference	NMEA 01803 Specifications

3.5.7.7.4 Get Acquired Position - $GPSACP

$GPSACP - Get Acquired Position	
AT$GPSACP	Execution command returns information about the last GPS position in the format: **$GPSACP: <UTC>,<latitude>,<longitude>,<hdop>,<altitude>, <fix>,<cog>,<spkm>,<spkn>,<date>,<nsat>** where: **<UTC>** - UTC time (hhmmss.sss) referred to GGA sentence **<latitude>** - format is ddmm.mmmm N/S (referred to GGA sentence) where: dd - degrees 00..90 mm.mmmm - minutes 00.0000..59.9999 N/S: North / South **<longitude>** - format is dddmm.mmmm E/W (referred to GGA sentence) where: ddd - degrees 000..180 mm.mmmm - minutes 00.0000..59.9999 E/W: East / West **<hdop>** - x.x - Horizontal Diluition of Precision (referred to GGA sentence) **<altitude>** - xxxx.x Altitude - mean-sea-level (geoid) in meters (referred to GGA sentence) **<fix>** - 0 - Invalid Fix 2 - 2D fix 3 - 3D fix **<cog>** - ddd.mm - Course over Ground (degrees, True) (referred to VTG sentence) where: ddd - degrees 000..360 mm - minutes 00..59 **<spkm>** - xxxx.x Speed over ground (Km/hr) (referred to VTG sentence)

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$GPSACP - Get Acquired Position	
	<spkn> - xxxx.x- Speed over ground (knots) (referred to VTG sentence) **<date>** - ddmmyy Date of Fix (referred to RMC sentence) where: dd - day 01..31 mm - month 01..12 yy - year 00..99 - 2000 to 2099 **<nsat>** - nn - Total number of satellites in use (referred to GGA sentence) 00..12
AT$GPSACP?	Read command has the same meaning as the Execution command
AT$GPSACP=?	Test command returns the **OK** result code
Example	AT$GPSACP $GPSACP:080220.479,4542.82691N,01344.26820E,259.07,3,2.1,0.1,0.0,0.0,270705,09 OK
Reference	NMEA 01803 Specifications

3.5.7.7.5 Set The GPS Module In Power Saving Mode - $GPSPS

$GPSPS - Set The GPS Module In Power Saving Mode	
AT$GPSPS=<mode [,<PTF_Period>]	Set command allows to set the GPS module in Power saving mode. Parameters: **<mode>** - the GPS receiver can operate in three modes 0 - full power mode, power saving disabled (default); it is the standard operating mode; power is supplied to the receiver continuously and the GPS receiver continues to operate without an interrupt. 2 - push-to-fix mode; the GPS receiver is generally off, but turns on frequently enough to collect ephemeris data to maintain the GPS1 realtime clock calibration so that, upon user request, a position fix can be provided quickly after power-up. **<PTF_Period>** - push-to-fix period, numeric value in secs; when mode is push-to-fix, the receiver turns on periodically according to this parameter; default value is 1800 sec.
AT$GPSPS?	Read command returns the current power saving mode and push-to-fix period, in the format: **$GPSPS: <mode>,<PTF_Period>**
AT$GPSPS=?	Test command returns the available range for **<mode>** and **<PTF_Period>**

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3.5.7.7.6 Wake Up GPS From Power Saving Mode - $GPSWK

$GPSWK - Wake Up GPS From Power Saving Mode	
AT$GPSWK	Execution command allows to wake up the GPS module if set in sleeping mode due to power saving. Note: if the GPS module is in push-to-fix mode, issuing **$GPSWK** pemits to wake up it before the push to fix period; after the new fix the GPS module will return in push-to-fix mode with the same parameters.
AT$GPSWK=?	Test command returns the **OK** result code
Note	Available in “controlled mode” only

3.5.7.7.7 Save GPS Parameters Configuration - $GPSSAV

$GPSSAV - Save GPS Parameters Configuration	
AT$GPSSAV	Execution command stores the current GPS parameters in the NVM of the device.
AT$GPSSAV=?	Test command returns the **OK** result code
Example	AT$GPSSAV OK
Note	The module must be restarted to use the new configuration

3.5.7.7.8 Restore To Default GPS Parameters - $GPSRST

$GPSRST - Restore To Default GPS Parameters	
AT$GPSRST	Execution command resets the GPS parameters to “Factory Default” configuration and stores them in the NVM of the device.
AT$GPSRST=?	Test command returns the OK result code
Example	AT$GPSRST OK
Note	The module must be restarted to use the new configuration

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3.5.7.8 SIM Toolkit AT Commands

3.5.7.8.1 SIM Tookit Interface Activation - #STIA

#STIA - SIM Tookit Interface Activation	
AT#STIA= [<mode> [,<timeout>]]	Set command is used to activate the SAT sending of unsolicited indications when a **proactive command** is received from SIM. Parameters: **<mode>** 0 - disable SAT (no **<timeout>** required, if given will be ignored) 1 - enable SAT without unsolicited indication **#STN** 2 - enable SAT and extended unsolicited indication **#STN** (see #STGI) 3 - enable SAT and reduced unsolicited indication **#STN** (see #STGI) **<timeout>** - time-out for user responses 1..255 - time-out in minutes (default 10). Any ongoing (but unanswered) **proactive command** will be aborted automatically after **<timeout>** minutes. In this case, the terminal response is either “ME currently unable to process command”, or if applicable, “No response from user”. In addition an unsolicited indication will be sent to the external application: **#STN: <cmdTerminateValue>** where: **<cmdTerminateValue>** is defined as **<cmdType> + terminate offset**; the terminate offset equals 100. Note: every time the SIM application issues a **proactive command** that requires user interaction an unsolicited code will be sent, if enabled with **#STIA** command, as follows: • if **<mode>** parameter of **#STIA** command has been set to 3 (reduced unsolicited indication) an unsolicited indication will be sent, indicating the type of **proactive command** issued by the SIM: **#STN: <cmdType>** • if **<mode>** parameter of **#STIA** command has been set to 2 (extended unsolicited indication) the format of the unsolicited indication depends on the specific command: *if **<cmdType>=1** (REFRESH)* an unsolicited notification will be sent to the user: **#STN: <cmdType>,<refresh type>**

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#STIA - SIM Tookit Interface Activation

where:
<refresh type>
0 - SIM Initialization and Full File Change Notification;
1 - File Change Notification;
2 - SIM Initialization and File Change Notification;
3 - SIM Initialization;
4 - SIM Reset

In this case neither #STGI nor #STSR commands are required:
- **AT#STGI** is accepted anyway.
- **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.

if ***<cmdType>=17*** *(SEND SS)*
if ***<cmdType>=19*** *(SEND SHORT MESSAGE)*
if ***<cmdType>=20*** *(SEND DTMF)*
if ***<cmdType>=32*** *(PLAY TONE)*

an unsolicited notification will be sent if allowed by SIM (see 3GPP TS 31.114):

#STN: <cmdType>[,<text>]

where:
<text> - (optional) text to be displayed to user

In these cases neither #STGI nor #STSR commands are required:
- **AT#STGI** is accepted anyway.
- **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.

In case of SEND SHORT MESSAGE (**<cmdType>**=19) command if sending to network fails an unsolicited notification will be sent

#STN: 119

if ***<cmdType>=33*** *(DISPLAY TEXT)*

an unsolicited notification will be sent if allowed by SIM (see 3GPP TS 31.114):

#STN: <cmdType>,<cmdDetails>[,<text>]

where:
<cmdDetails> - unsigned Integer used as a bit field.

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#STIA - SIM Tookit Interface Activation

0..255 - used as a bit field:
bit 1:
0 - normal priority
1 - high priority
bits 2 to 7: reserved for future use
bit 8:
0 - clear message after a delay
1 - wait for user to clear message
<text> - (optional) text to be displayed to user

In this case:
1. if **<cmdDetails>/bit8** is **0** neither #STGI nor #STSR commands are required:
   - **AT#STGI** is accepted anyway.
   - **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.
2. If **<cmdDetails>/bit8** is 1 #STSR command is required

if ***<cmdType>=18*** *(SEND USSD)*

an unsolicited notification will be sent to the user:

#STN: <cmdType>[,<text>]

where:
<text> - optional text string sent by SIM

In this case:
- **AT#STSR=18,20** can be sent to end USSD transaction.
- **AT#STGI** is accepted anyway.
- **AT#STSR=<cmdType>,0** will answer **OK** but do nothing.

All other commands:

the unsolicited indication will report just the proactive command type:

#STN: <cmdType>

Note: if the **call control** or **SMS control facility in the SIM** is activated, when the customer application makes an outgoing call, or sends an SS or USSD, or an SMS, the following **#STN** unsolicited indication could be sent, according to 3GPP TS 31.114, to indicate whether the outgoing call has been accepted, rejected or modified by the SIM, or if the SMS service

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#STIA - SIM Tookit Interface Activation	
	centre address or destination has been changed: **#STN: <cmdTerminateValue>,<Result>[,<TextInfo>[,<Number>[,<MODestAddr>]]]** where **<cmdTerminateValue>** 150 - SMS control response 160 - call/SS/USSD response **<Result>** 0 - Call/SMS not allowed 1 - Call/SMS allowed 2 - Call/SMS allowed with modification **<Number>** - Called number, Service Center Address or SS String in ASCII format. **<MODestAddr>** - MO destination address in ASCII format. **<TextInfo>** - alpha identifier provided by the SIM in ASCII format. Note: when the SIM Application enters its main menu again (i.e. not at startup) an unsolicited result code **#STN: 254** is sent. The TA does not need to respond directly, i.e. **AT#STSR** is not required. It is possible to restart the SAT session from the main menu again with the command **AT#STGI=37**. Note: The settings are saved on user profile and available on following reboot. SIM Toolkit activation/deactivation is only performed at power on.
AT#STIA?	Read command can be used to get information about the SAT interface in the format: **#STIA: <state>,<mode>,<timeout>,<SatProfile>** where: **<state>** - the device is in one of the following state: 0 - SIM has not started its application yet 1 - SIM has started its application (SAT main menu ready) **<mode>** - SAT and unsolicited indications enabling status (see above) **<timeout>** - time-out for user responses (see above) **<SatProfile>** - SAT Terminal Profile according to 3GPP TS 31.114, i. e. the list of SIM Application Toolkit facilities that are supported by the ME. The profile cannot be changed by the TA.

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#STIA - SIM Tookit Interface Activation	
	Note: In SAT applications usually an SMS message is sent to the network provider containing service requests, e.g. to send the latest news. The provider returns a message with the requested information. Before activating SAT it is recommended to set the SMS text mode with command **AT+CMGF=1** and to enable unsolicited indications for incoming SMS messages with command +CNMI.
AT#STIA=?	Test command returns the range of available values for the parameters **<mode>** and **<timeout>**.
Note	Just one instance at a time, the one which first issued **AT#STIA=*n*** (with ***n*** different from zero), is allowed to issue SAT commands, and this is valid till the same instance issues **AT#STIA=0**. After power cycle another instance can enable SAT.
Note	A typical SAT session on AT interface starts after an **#STN: 37** unsolicited code is received, if enabled(see above). At that point usually an **AT#STSG=37** command is issued (see **#STSGI)** and after the SAT main menu has been displayed on TE an **AT#STSR=37,0,x** command is issued to select an item in the menu (see **#STSR)**

3.5.7.8.2 SIM Tookit Get Information - #STGI

#STGI - SIM Tookit Get Information	
AT#STGI= **[<cmdType>]**	**#STGI** set command is used to request the parameters of a **proactive command** from the ME. Parameter: **<cmdType>** - **proactive command** ID according to 3GPP TS 31.114 (decimal); these are only those command types that use the AT interface; SAT commands which are not using the AT interface (not MMI related SAT commands, e.g. PROVIDE LOCAL INFORMATION) are executed without sending any indication to the user 1 - REFRESH 16 - SET UP CALL 17 - SEND SS 18 - SEND USSD 19 - SEND SHORT MESSAGE 20 - SEND DTMF 32 - PLAY TONE 33 - DISPLAY TEXT 34 - GET INKEY 35 - GET INPUT 36 - SELECT ITEM

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#STGI - SIM Tookit Get Information

37 - SET UP MENU

Requested command parameters are sent using an **#STGI** indication:

#STGI: <parameters>

where **<parameters>** depends upon the ongoing **proactive command** as follows:

if ***<cmdType>=1*** *(REFRESH)*

#STGI: <cmdType>,<refresh type>
where:
<refresh type>
0 - SIM Initialization and Full File Change Notification;
1 - File Change Notification;
2 - SIM Initialization and File Change Notification;
3 - SIM Initialization;
4 - SIM Reset

if ***<cmdType>=16*** *(SET UP CALL)*

#STGI: <cmdType>,<cmdDetails>,[<confirmationText>], <calledNumber>

where:
<cmdDetails> - unsigned integer, used as an enumeration
0 - Set up call, but only if not currently busy on another call
1 - Set up call, but only if not currently busy on another call, with redial
2 - Set up call, putting all other calls (if any) on hold
3 - Set up call, putting all other calls (if any) on hold, with redial
4 - Set up call, disconnecting all other calls (if any)
5 - Set up call, disconnecting all other calls (if any), with redial
<confirmationText> - string for user confirmation stage
<calledNumber> - string containing called number

if ***<cmdType>=17*** *(SEND SS)*
if ***<cmdType>=18*** *(SEND USSD)*
if ***<cmdType>=19*** *(SEND SHORT MESSAGE)*
if ***<cmdType>=20*** *(SEND DTMF)*
if ***<cmdType>=32*** *(PLAY TONE)*

#STGI: <cmdType>[,<text>]

where:

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#STGI - SIM Tookit Get Information	
	<text> - text to be displayed to user *if* ***<cmdType>=33*** *(DISPLAY TEXT)* **#STGI: <cmdType>,<cmdDetails>[,<text>]** where: **<cmdDetails>** - unsigned Integer used as a bit field. 0..255 - used as a bit field: **bit 1**: 0 - normal priority 1 - high priority **bits 2 to 7**: reserved for future use **bit 8**: 0 - clear message after a delay 1 - wait for user to clear message **<text>** - text to be displayed to user *if* ***<cmdType>=34*** *(GET INKEY)* **#STGI: <cmdType>,<cmdDetails>,<text>** where: **<cmdDetails>** - unsigned Integer used as a bit field. 0..255 - used as a bit field: **bit 1**: 0 - Digits only (0-9, *, # and +) 1 - Alphabet set; **bit 2**: 0 - SMS default alphabet (GSM character set) 1 - UCS2 alphabet **bit 3**: 0 - Character sets defined by bit 1 and bit 2 are enabled 1 - Character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested **bits 4 to 7**: 0 **bit 8**: 0 - No help information available 1 - Help information available **<text>** - String as prompt for text. *if* ***<cmdType>=35*** *(GET INPUT)*

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#STGI - SIM Tookit Get Information	
	#STGI: <cmdType>,<commandDetails>,<text>,<responseMin>, <responseMax>[,<defaultText>] where: **<commandDetails>** - unsigned Integer used as a bit field. 0..255 - used as a bit field: **bit 1**: 0 - Digits only (0-9, *, #, and +) 1 - Alphabet set **bit 2**: 0 - SMS default alphabet (GSM character set) 1 - UCS2 alphabet **bit 3**: 0 - ME may echo user input on the display 1 - User input shall not be revealed in any way. Hidden entry mode (see 3GPP TS 31.114) is only available when using digit input. In hidden entry mode only characters ('0'-'9', '*' and '#') are allowed. **bit 4**: 0 - User input to be in unpacked format 1 - User input to be in SMS packed format **bits 5 to 7**: 0 **bit 8**: 0 - No help information available 1 - Help information available **<text>** - string as prompt for text **<responseMin>** - minimum length of user input 0..255 **<responseMax>** - maximum length of user input 0..255 **<defaultText>** - string supplied as default response text *if* ***<cmdType>=36*** *(SELECT ITEM)* The first line of output is: **#STGI: <cmdType>,<commandDetails>,<numOfItems>[,<titleText>] <CR><LF>** One line follows for every item, repeated for **<numOfItems>**: **#STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]** where: **<commandDetails>** - unsigned Integer used as a bitfield 0..255 - used as a bit field:

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#STGI - SIM Tookit Get Information	
	bit 1: 0 - Presentation type is not specified 1 - Presentation type is specified in bit 2 **bit 2**: 0 - Presentation as a choice of data values if bit 1 = '1' 1 - Presentation as a choice of navigation options if bit 1 is '1' **bit 3**: 0 - No selection preference 1 - Selection using soft key preferred **bits 4 to 7**: 0 **bit 8**: 0 - No help information available 1 - Help information available **<numOfItems>** - number of items in the list **<titleText>** - string giving menu title **<itemId>** - item identifier 1..**<numOfItems>** **<itemText>** - title of item **<nextActionId>** - the next proactive command type to be issued upon execution of the menu item. 0 - no next action information available. *if* ***<cmdType>=37*** *(SET UP MENU)* The first line of output is: **#STGI: <cmdType>,<commandDetails>,<numOfItems>,<titleText>** **<CR><LF>** One line follows for every item, repeated for **<numOfItems>**: **#STGI: <cmdType>,<itemId>,<itemText>[,<nextActionId>]** where: **<commandDetails>** - unsigned Integer used as a bitfield 0..255 - used as a bit field: **bit 1**: 0 - no selection preference 1 - selection using soft key preferred **bit 2 to 7**: 0 **bit 8**: 0 - no help information available 1 - help information available **<numOfItems>** - number of items in the list

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#STGI - SIM Tookit Get Information	
	<titleText> - string giving menu title **<itemId>** - item identifier 1..**<numOfItems>** **<itemText>** - title of item **<nextActionId>** - the next proactive command type to be issued upon execution of the menu item. 0 - no next action information available. Note: upon receiving the **#STGI** response, the TA must send **#STSR** command (see below) to confirm the execution of the proactive command and provide any required user response, e.g. selected menu item.
AT#STGI?	The read command can be used to request the currently ongoing **proactive command** and the SAT state in the format **#STGI: <state>,cmdType>** where: **<state>** - SAT interface state (see **#STIA)** **<cmdType>** - ongoing proactive command An error message will be returned if there is no pending command.
AT#STGI=?	Test command returns the range for the parameters **<state>** and **<cmdType>**.
Note	The unsolicited notification sent to the user: **#STN: 37** is an indication that the main menu of the SIM Application has been sent to the TA. It will be stored by the TA so that it can be displayed later at any time by issuing an **AT#STGI=37** command. A typical SAT session on AT interface starts after an **#STN: 37** unsolicited code is received, if enabled. At that point usually an **AT#STGI=37** command is issued, and after the SAT main menu has been displayed on TE an **AT#STSR=37,0,x** command is issued to select an item in the menu (see below). The session usually ends with a SIM action like sending an SMS, or starting a call. After this, to restart the session from the beginning going back to SAT main menu it is usually required an **AT#STSR=37,16** command. The unsolicited notification sent to the user: **#STN:237** is an indication that the main menu of the SIM Application has been removed from the TA, and it is no longer available. In this case **AT#STGI=37** command response will be always **ERROR**.

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#STGI - SIM Tookit Get Information	

3.5.7.8.3 SIM Tookit Send Response - #STSR

#STSR - SIM Tookit Send Response	
AT#STSR=[<cmdType>,<userResponse>[,<data>]]	The write command is used to provide to SIM user response to a command and any required user information, e.g. a selected menu item. Parameters: **<cmdType>** - integer type; **proactive command** ID according to 3GPP TS 31.114 (see **#STGI**) **<userResponse>** - action performed by the user 0 - command performed successfully (call accepted in case of call setup) 16 - proactive SIM session terminated by user 17 - backward move in the proactive SIM session requested by the user 18 - no response from user 19 - help information required by the user 20 - USSD/SS Transaction terminated by user 32 - TA currently unable to process command 34 - user has denied SIM call setup request 35 - user cleared down SIM call before connection or network release **<data>** - data entered by user, depending on **<cmdType>**, only required if **<Result>** is 0: ***Get Inkey*** **<data>** contains the key pressed by the user; used character set should be the one selected with **+CSCS** Note: if, as a user response, a binary choice (Yes/No) is requested by the SIM application using bit 3 of the **<commandDetails>** parameter the valid content of the **<inputString>** is: a) “IRA”, ”8859-1”, ”PCCP437” charsets: “Y” or “y” (positive answer) and “N” or “n” (negative answer) b) UCS2 alphabet “0079” or “0059” (positive answer) and “006E” or “004E” (negative answer) ***Get Input*** **<data>** - contains the string of characters entered by the user (see above) ***Select Item*** **<data>** - contains the item identifier selected by the user Note: Use of icons is not supported. All icon related actions will respond with no icon available.
AT#STSR?	The read command can be used to request the currently ongoing **proactive command** and the SAT state in the format

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#STSR - SIM Tookit Send Response	
	#STSR: <state>,<cmdType> where: **<state>** - SAT interface state (see **#STIA)** **<cmdType>** - ongoing proactive command An error message will be returned if there is no pending command.
AT#STSR=?	Test command returns the range for the parameters **<state>** and **<cmdType>**.

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3.5.7.9 SAP AT Commands Set

3.5.7.9.1 Remote SIM Enable - #RSEN

#RSEN – Remote SIM Enable	
AT#RSEN=<mode>[, <sapformat>[, <role>[, <muxch>[, <beacon>]]]]	Set command is used to enable/disable the Remote SIM feature. Parameters: **<mode>** 0 - disable 1 - enable **<sapformat>** 0 - X-SAP 1 - binary SAP (default) **<role>** 0 - remote SIM Client (default) 1 - remote SIM Server (unsupported) **<muxch>** - MUX Channel Number; mandatory if **<mode>=1** and **<sapformat>=1** 1..3 - dummy value **<beacon>** - retransmition timer of SAP Connection Request 0 - only one transmition (default) 1..100 - timer interval in seconds. NOTES: If the module has a SIM inserted, when it receives the enable Command: - de-register from the actual network - de-initialize the current SIM. NOTE for **<sapformat>=1** (binary SAP): while RSEN is activate SAP connection status is signalled with following URC: **#RSEN: <conn>** where **<conn>** - connection status 0 - disconnected 1 - connected
AT#RSEN?	Read command returns the connection status of Remote SIM feature
AT#RSEN=?	Test command returns all supported values of Remote SIM Enable command

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4 List of acronyms

ARFCN	Absolute Radio Frequency Channel Number
AT	Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
CCM	Current Call Meter
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
CUG	Closed User Group
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DCS	Digital Cellular System
DGPS	Differential GPS, the use of GPS measurements, which are differentially corrected
DNS	Domain Name System Server
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Fraquency
DTR	Data Terminal Ready
GGA	GPS Fix data
GLL	Geographic Position – Latitude/Longitude
GLONASS	Global positioning system maintained by the Russian Space Forces
GMT	Greenwich Mean Time
GNSS	Any single or combined satellite navigation system (GPS, GLONASS and combined GPS/GLONASS)
GPRS	Global Packet Radio Service
GPS	Global Positioning System
GSA	GPS DOP and Active satellites
GSM	Global System Mobile
GSV	GPS satellites in view
HDLC	High Level Data Link Control
HDOP	Horizontal Dilution of Precision
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IRA	International Reference Alphabet
IWF	Interworking Function
MO	Mobile Originated

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MT	Mobile Terminal
NMEA	National Marine Electronics Association
NVM	Non Volatile Memory
PCS	Personal Communication Service
PDP	Packet Data Protocol
PDU	Packet Data Unit
PIN	Personal Identification Number
PPP	Point to Point Protocol
PUK	Pin Unblocking Code
RLP	Radio Link Protocol
RMC	Recommended minimum Specific data
RTS	Request To Send
SAP	SIM Access Profile
SCA	Service Center Address
SMS	Short Message Service
SMSC	Short Message Service Center
SMTP	Simple Mail Transport Protocol
TA	Terminal Adapter
TCP	Transmission Control Protocol
TE	Terminal Equipment
UDP	User Datagram Protocol
USSD	Unstructured Supplementary Service Data
UTC	Coordinated Universal Time
VDOP	Vertical dilution of precision
VTG	Course over ground and ground speed
WAAS	Wide Area Augmentation System

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5 Document Change Log

Revision	Date	SW release	Changes
ISSUE #0	31/01/08	08.01.001	Initial release
ISSUE #1	28/04/08	08.01.002	Added Telit custom AT commands
ISSUE #2	25/06/08	08.01.003	Added Telit custom AT commands
ISSUE #3	17/07/08	08.01.004	Added Telit custom AT commands

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